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Original Communications.

LUMBAR PUNCTURE IN (*a*) OTITIC SEROUS MENINGITIS; (*b*) CEREBROSPINAL FORM OF TYPHOID FEVER; AND (*c*) CEREBROSPINAL MENINGITIS.*

BY FRANCIS HUBER, M.D.,
New York.

Lumbar puncture of the subarachnoid space, proposed by Quincke in 1891, was demonstrated before this Society by Caillé in 1895. The following year, the subject was more fully discussed by him, particularly in reference to the local treatment of tubercular meningitis. Wentworth presented the results of "some experimental work on lumbar puncture," and at the same meeting C. G. Jennings reported a case. The method was urged principally for the purpose of diagnosis. In the summary of the experiments made at the Sears' Pathological Laboratory, Wentworth says: "The differential diagnosis between the various kinds of meningitis can be made by microscopic examination of the sediment, by culture taken from the fluid and by inoculation experiments." "Inoculation experiments afford the surest means of determining tubercular meningitis. It is of value to distinguish between the varieties of meningitis in order to determine if tubercular meningitis is recovered from."

In an excellent article (the first on the subject in this country), G. W. Jacoby (*New York Medical Journal,* December 28, 1895) writes: "Therapeutically, it is only of direct value as a palliative through the reduction of increased pressure; it may, perhaps, prove of more service indirectly as the first step to local treatment of the cord or brain."

A. Jacobi says, "In the treatment of tubercular meningitis lumbar puncture, mostly between the third and fourth lumbar vertebræ, has resulted in facilitating a diagnosis in many instances and in temporarily relieving some symptoms, those of congestion, edema, pressure, coma, but rarely aided in accomplishing a cure."

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* Read by title at the meeting of the American Pediatric Society, Washington, D. C., May 12, 13, and 14, 1903.

To quote further:—"In order to obtain any cerebrospinal liquor from the cranial cavity, lumbar puncture should withdraw from 10 to 15 c.cm. The total amount should not often exceed 20 or 30 at one time. None may be obtained when the needle does not reach the spinal canal, or is obstructed by fibrin,* or is caught between the nerve-fibres of the cauda equina, or when the connection between the ventricles and the cerebral and spinal subarachnoid spaces has been disturbed by exudative processes. The normal liquor, also that obtained in many pathological conditions, is clear, of 1007 specific gravity and contains from 0.2 to 0.5 per mille albumin. One per mille albumin in the fluid means inflammation. Sugar is sometimes found in connection with tumors. In simple *serous meningitis,* in chronic hydrocephalus, in that connected with pneumonia and other infectious diseases, also with uncomplicated tumors, the liquor is clear; in cerebrospinal meningitis it is turbid, somewhat purulent, and contains pneumococci and meningococci, in many cases (by no means all) of abscess and cerebrospinal meningitis pus and streptococci and staphylococci; in tubercular meningitis mostly bacilli; in apoplexies and hemorrhagic pachymeningitis blood. Kiliani and G. W. Jacoby found blood when the diagnosis of spinal hemorrhage had been made."

In his work on "Diseases of Children," Koplik tells us: "It is today one of the most useful adjuncts to the methods of diagnosis in acute and chronic forms of cerebral and spinal disease. Its future usefulness as a therapeutic measure is not clearly established, but will probably be in relieving symptoms due to pressure, and removing the excess of inflammatory exudate in the various forms of meningitis." On page 195 he advocates the procedure at first as a diagnostic and subsequently as a therapeutic measure. On page 196 he gives distinct and explicit indications for repeated puncture in cerebrospinal meningitis.

Most of the authors agree with Jacobi in the belief that it has not as yet given much satisfaction from the point of view of therapeutics. In meningitis it relieves the headache and the delirium and hyperesthesia, though the symptoms are liable to recur. In cerebrospinal meningitis and in lead encephalopathies favorable results have been reported by various authorities. Tubercular meningitis (the diagnosis having been confirmed by this method), we now know positively, may terminate favorably.

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* "To the above may be added small particles of skin, fibrous tissue, bone or blood clot."

Several cases have come under personal observation, in which excellent results have followed the use of lumbar puncture. The most striking of these is the following that formed the basis of a paper read before the New York State Medical Society and reported in *American Medicine.*

CASE I.—Ida B., two and one half years old, born in New York, of Russian parentage, was admitted to the children's ward, Beth Israel Hospital, January 8, 1903. No history of tuberculosis in the family. History of insanity in grandmother, uncle died insane, aunt suffers from epilepsy. Father alcoholic.

Personal History.—Was born after a difficult labor, though instruments were not employed, cyanosed for several days, cry feeble. Breast-fed for nine months, began to walk at seventeen months. For more than two years has had a foul smelling discharge from the right ear, the original cause of which could not be made out at the time. No history of any eruptive fevers. A subsequent examination revealed large adenoids.

Present History.—Fourteen days before admission, the child became restless, began to cry a great deal and acted as though greatly frightened. Four days later began to have convulsions. The seizures were general and recurred every thirty minutes. The attacks were characterized by a loud cry, the child would fall to the ground suddenly. The movements were both clonic and tonic and lasted about three minutes. Of late, the attacks have increased in frequency, but are of shorter duration. Occasionally vomiting occurs after an attack, at other times the child would cry and fall asleep. The convulsive attacks occurred at night as well as during the day and then brought on by any external source of irritation.

Examination on Admission.—General condition was good. Face was suffused and expression dull; child apathetic and in a semicomatose state. Extremities were cold and blue. Surface generally mottled. Tongue coated, moist. Eyes convergent strabismus, moderate lateral nystagmus. Pupils dilated, right more so than left. Under light test contracted slowly and to moderate extent. Then slowly dilated again, and again contracted. Tache cerebrale was easily produced. There was an offensive purulent discharge from the right ear, no tenderness over the mastoid region or side of skull; no edema of this area. Pulse rapid, no irregularity or intermission. Reflexes in general exaggerated. Moving the patient or attempts at feeding were followed by convulsive seizures. Lumbar puncture proposed for diagnostic purposes, could not be carried out as the violent character of the attacks brought on in attempting to put the child in position, interfered with the necessary manipulations.

The neuropathic family history of insanity, epilepsy, etc., in the parents and near relatives, suggested a condition of status epilepticus. The latter, however, could be excluded from the history of the case, and the fact that the convulsions dated back only two weeks. Careful inquiry failed to elicit a history of a fall, blow or traumatism of any kind. By exclusion, therefore, we were compelled to look upon the chronic suppuration in the ear as a probable etiological factor, though no focal symptoms were present. The statistics of Pitt estimate that 5 per cent. of all cases of meningitis are of otitic origin. Dr. W. Freudenthal, to whom I herewith extend my thanks for his wise and conservative counsel, was requested to examine the patient.

Report of Dr. Wolf Freudenthal. "On January 10, 1903, I saw the above mentioned child at the request of Dr. Francis Huber. She had had convulsions, which were increasing in number and severity, the pulse was getting irregular and the whole aspect of the case appeared worse than at the beginning. There being a suspicion of mastoiditis I was called in. After removing from the right ear the offensive discharge that had lasted for the past two years, an exceptionally large perforation of the drum membrane could be seen, out of which pus oozed. There was no swelling over the mastoid, no tenderness or pain over any part, the temperature was 100° F., pulse 130 and the child cried incessantly. Besides it had had seven attacks during the past night and eight during the day. As the mastoid symptoms were not very well marked, it was thought there could be no risk in waiting twenty-four hours longer. At the end of this period the attacks had increased in frequency and the general prostration was more marked. The general belief of all concerned in the case now was, that the only salvation for the child could come from the opening of the mastoid. At 2:30 P.M. on January 11th the operation was performed in the usual manner. After chiseling away all the diseased bone, the dura mater was seen to bulge outward and it was apparent that there was pressure from within. I hesitated, however, to withdraw any fluid, because an infection was possible and surely not desirable. The wound was packed and at 4 P.M. the house physician, Dr. Nisonoff, under the supervision of Dr. Huber, withdrew about 30.0 grams of spinal fluid by means of lumbar puncture. Within the next two hours the child had three convulsive attacks. Six hours later twitching of the extremities set in beginning at 12 midnight and ending at 1 A.M. She became quiet after repeated hypodermic medication. Another such severe attack commenced at 4:45 in the morning and lasted for forty-five minutes. At noon the next day (12th) 16.0 grams of spinal fluid were withdrawn, after which the symptoms slowly but gradually improved and the child was discharged on February 2, 1903, *i.e.*, twenty-two days after the operation was performed." When seen subsequently by the writer, about two months later, she was bright and active, running about and playing, presenting no evidence of her severe illness.

In the treatment of the case there is no doubt in my mind that in spite of the nonexistence of any local evidence of mastoid trouble, the operation was justified. In addition to getting rid of the local diseased focus we were enabled to eliminate a possible pachymeningitis and at the same time relieve the pressure to a limited extent. In resorting to lumbar puncture an accidental infection immediate or remote of the cerebral meninges was avoided. The favorable therapeutic effects following the withdrawal of the cerebrospinal fluid were manifested in a very few days. On the 14th the child was still somewhat restless. On the 16th she was bright, took an interest in her surroundings and could with difficulty be kept in bed.

The following case is presented with some hesitation and many apologies, not because of any doubt as to the therapeutic value of the puncture, but rather in view of the facts that a more careful bacteriological examination of the cerebrospinal fluid had not been made. The fluid was sent to an expert pathologist and bacteriologist, who reported a negative finding as regards tubercle bacilli. Unfortunately no cultures were made, nor was there any examination for typhoid bacilli instituted, though such a request was made when the specimen was sent to the laboratory.

CASE II.—Annie H., nine years of age, school girl, born in Russia, eight years in this country, was admitted to the Beth

Israel Hospital, October 4, 1902. The family and personal history, not having any bearing upon her present trouble, is omitted.

Present History.—About four days before admission, the child began to complain of headache; constipation and elevation of temperature were noticed. The fever which was quite high, has persisted. A careful inquiry failed to elicit a history of chills or convulsions.

Examination on Admission.—The child was in a semicomatose state, very restless, with slight twitchings of the muscles of the face and extremities. The head was retracted. Pupils were dilated and did not react; nystagmus was present, but no strabismus. She had vomited some and was quite delirious. Extremities were cold. Kernig's sign present. Tache cerebrale readily brought out. Heart and lungs negative. Abdomen distended and somewhat tender. Roseola fairly numerous. Temperature 105°F. The pulse was weak, no irregularity in force or rhythm. During the following three days marked rigidity of the extremities and neck were noticed. The pupils were dilated and reacted in a sluggish way to light. Hydrocephalic cry. Marked muttering delirium.

October 6th.—Pulse very weak, child somewhat cyanosed.

October 7th.—As the delirium had increased and the headache had become more violent with frequent outcries as though suffering intense pain, it was decided to resort to lumbar puncture. About two drams of clear cerebrospinal fluid, were allowed to escape, the fluid flowing in a steady stream with considerable force. After this the pressure symptoms were somewhat lessened. Widal's reaction positive (1-20). Incontinence of urine was present. Swallows with difficulty.

October 8th.—Child unconscious; pulse very weak; patient lies in bed with knees drawn up; extremities rigid.

October 9th.—Semicomatose condition, though at intervals is apparently rational. Pupils respond slowly and imperfectly—lumbar puncture negative or rather unsuccessful.

October 10th.—Child shrieked constantly toward morning, and was delirious; urinates involuntarily; was rational most of the time during the day. Subdural lumbar puncture made today and two drams of fluid escaped with evidence of considerable pressure.

October 11th.—Widal's reaction positive (1-20). Rigidity of extremities marked, more so in lower.

October 12th.—Child rational greater part of the night. Pupils react but little; shrieks during sleep.

October 13th and 14th.—More rational and quiet. Examination of fundus of eye negative.

October 16th-22nd.—Pupils still dilated, reacting but sluggishly to light.

October 24th.—Widal's reaction positive (1-20).

October 27th.—Irregular reaction of pupils; left less than right.

October 31st.—Dr. J. E. Weeks' examination of the eyes revealed some slight anemia of the fundus, otherwise normal.

November 3d.—General condition greatly improved.

November 4th.—Pupils responded well to light, but are still dilated.

Improvement continued and on 21st child was allowed to sit up in the ward. No further untoward symptoms having in the meanwhile developed the child was discharged in excellent mental and physical condition about November 30th.

Temperature on October 4th, on admission 105° F. October 4th-9th, ranged between 103°-106° F., sponge or pack reducing it but slightly. October 9th-14th, ranged between 100°-105° F., there being an evening rise with big drops after sponging or packing. October 15th-25th, varied between 100° and 103° F., with regular evening exacerbations. October 26th to November 6th, from 99° to 102° F., 5 P.M. November 6th-9th, 100° F. or below. November 10th-21st, regularly less than 100° F. November 21st-29th, from 98° to 100° F.

Urine.—Negative throughout.

Pulse.—Irregular in force at times, without irregularity in rhythm.

Respiration.—For the first few days from 30-36. Later on about 24.

Of course in the case reported above, it may be questioned whether there was any relation of cause and effect between the removal of the cerebrospinal liquor and the recovery. In this connection, we must not fail to consider that cases presenting marked symptoms of meningeal irritation are not all necessarily cases of meningitis. We are fully aware that cases occur in different acute infectious diseases (typhoid, influenza, pneumonia, etc.) in which anorexia, vomiting, constipation, insomnia, delirium, severe pains in the head and neck with cervical stiffness and unequal pupils are observed, which recover completely in a very short period of time.

Hutinel in discussing nonsuppurating meningitis (*Revue mens. des Mal de l'Enfance,* Vol. XX., No. 4) writes as follows:

"The meninges, like any other organ, may react to an irritant in varying degrees from a passing congestion to suppuration. The dividing lines established between meningitis, serous meningitis with bacteria and that without bacteria are purely theoretical.* Serous meningitis almost always occurs in the course of grave infections and has no pathognomonic symptoms. The onset may be sudden, or insidious and unrecognized. Vomiting is more constant than constipation.

Osler writes:—"In rare cases of typhoid the disease sets in with most intense cerebrospinal symptoms, simulating meningitis, severe headache, photophobia, retraction of the head, twitching of the muscles and even convulsions, occasionally drowsiness, stupor and signs of basilar meningitis may exist for ten days or more before the characteristic symptoms develop. The outset may be with mania."

Meningitis, though extremely rare, may occur. With the evidence obtained by lumbar puncture and the presence or absence of Kernig's sign, the diagnosis is now more easily made.

P. Moizard and H. Grenet (*Arch. de Méd. des Enfance,* June, 1903) report an instance of the cerebrospinal form of typhoid fever in a boy five years old. Such cases are relatively rare according to these observers. In the article the literature is fully quoted. Lumbar puncture failed to reveal any cellular elements.

In the case just reported, which recovered and in another which terminated fatally several weeks later, there was certainly an increase in intracranial pressure as shown by the forcible escape of the cerebrospinal liquor when lumbar puncture was made. In this connection the following observations are of interest. Nobecourt (*Revue des Mal. de l'Enfance,* Vol. XXI., No. 4) discusses the pathogenesis of the meningeal symptoms frequently observed in the course of bronchopneumonia—nontubercular in origin. He believes that the condition is better understood since lumbar puncture was regularly practiced.

The author finds that when meningeal symptoms are present, there is usually an *increase* in the amount of cerebrospinal fluid. It is usually limpid; exceptionally it is turbid. The fluid is generally sterile, now and then pneumococci are found.

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* It is a mistake not to admit that there may be transitory and curable meningeal irritations.

J. H. Musser in a paper on "Therapeutic Value of Spinal Puncture for Cerebral Symptoms in Typhoid Fever," read before the Congress of American Physicians and Surgeons recently, states that he has noticed symptoms, which the French termed meningismus, and which disappeared after a lumbar puncture was performed.

CASE III.—I. C., two-and-a-half years old, born in United States, admitted May 24, 1903, to the children's service, Beth Israel Hospital.

Family History.—Parents living and well. No diathesis, tubercular or rheumatic.

Personal History.—Labor normal. Bottle-fed (milk and prepared barley) for eight months, then mixed diet. Began to walk at fifteen months. Dentition normal.

Previous History.—No discharge from ear. Had diphtheria twelve months ago. One week later nephritis; also complicated by pneumonia. Whooping-cough six months ago and measles three months later.

Present History.—Began five days ago with fever, projectile vomiting, restlessness and headache. The vomiting continued for the first two days. The headache seems to have increased in severity as shown by facial aspect of pain. Three days ago the mother noticed retraction and stiffness of head; anorexia. Bowels constipated. Urine diminished.

Temperature on admission 103°F., which declined gradually to normal on third day. Since then has been between 99° and 100° F.; pulse varied between 130-120; respiration between 32-20.

Urine Examination.—May 30th and June 9th, light color, clear; acidity slight; specific gravity 1018; no albumin or sugar; microscopically—negative.

Physical Examination.—Child well nourished. Apathetic and semistuporous. Head retracted and rigid; tongue heavily coated; breath foul, due to ulcerative stomatitis; there are few ulcers on hard palate. The lips were fissured, on the inner surface numerous minute ulcers are found. Herpes labialis present. Nose, ears and mastoid normal. No nasal discharge. The pupils reacted to light; left was more dilated. Expression dull with a vacant stare; photophobia; pulse varied in force, frequency and regularity; heart normal; lungs negative; abdomen distended, showing stains of an old eruption. There were numerous superficial ulcers over lower end of sacrum and trochanters, probably the result of scratching. Reflexes are absent. Kernig's sign was obtained as well as cerebral tache.

May 25th.—Lumbar puncture; nothing could be obtained.

May 26th.—Lumbar puncture was again tried. This time eleven drams of a somewhat cloudy fluid removed. Microscopically a very large number of pus cells and few mononuclear cells were found. No tubercle bacilli or other microorganisms.

May 29th.—General condition. The child is much brighter, takes interest in things about him. The pupils are equal and react slowly. Pulse is regular.

May 30th.—Leukocytosis only 9,000.

June 1st.—Improving. Stomatitis also improving. Pupils equal and react sluggishly to light.

June 4th.—Child tries to sit up. Brighter.

June 6th.—Although the general condition is better the expression is still somewhat dull and stupid. No strabismus. Lymph nodes beneath angle of jaw enlarged. The ulcerative stomatitis is improving. Upper two incisors necrotic. Tongue is slightly coated and moist; heart and lungs negative; liver and spleen not palpable; abdomen distended, soft. Tache cerebral present; Kernig's sign absent. Superficial and deep reflexes present. Extremities cold; no edema or cyanosis.

June 10th.—Child sits up. Interested in things about him. A few days later discharged in good condition.

In the above case a single large tapping sufficed to relieve the tension, thereby favoring absorption. In another case at Roosevelt Hospital, the child's condition was very bad. Convulsions recurred at frequent intervals. Repeated tappings of small quantities were resorted to. The child recovered ultimately, but the mental faculties were left greatly impaired.

In the *Medical News,* March 23, 1901, Koplik reports a series of cases of cerebrospinal meningitis and advises repeated lumbar puncture as a curative method of value.

Other cases are reported in literature in which not infrequently a single tapping only was required. In the greater number, however, repeated punctures were necessary.

Though the cases reported by the writer are but few, they came under observation in a relatively short time. The results in each case were gratifying and tended to strengthen the favorable impression as to the therapeutic value of the method.

ABSCESS OF THE LUNG FOLLOWING ACUTE PNEUMONIA. A REPORT OF TWO CASES.*

BY L. EMMETT HOLT, M.D.,
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(Columbia University),
New York.

Abscesses of the lung of non-tuberculous origin are not uncommon in the autopsy room. They have been met with in my experience in about 7 per cent. of the autopsies upon infants and young children dying from pneumonia. Such abscesses are generally small, varying in size from a pea to a small marble; occasionally one as large as a walnut is seen. On one occasion I met with one which occupied nearly the entire lobe of the lung. Abscesses seen postmortem are seldom single, and frequently the affected part of the lung is fairly honey-combed with abscesses, some of them being very minute and others larger. These are usually seen in the lungs of children of low vitality, or have followed very intense inflammation, sometimes a very prolonged one.

Abscess of the lung as a clinical condition in young children is rare, the cases here reported being the first that have come under my personal observation.

Huber has twice reported to this Society (*Vide* Transactions American Pediatric Society, Vol. III., p. 235; Vol. V., p. 206) cases of pulmonary abscess successfully treated by operation. One of these was in a child thirteen months old, the other in one four years old.

CASE I.—ABSCESS IN THE LEFT UPPER LOBE OCCURRING TWO-AND-A-HALF MONTHS AFTER ACUTE PNEUMONIA; RECOVERY AFTER ASPIRATION.

J. P., male, eighteen months old, was admitted to the Babies' Hospital, December 30, 1902, with a history of having been taken ill with fever and rapid breathing two months before; more or less fever since, but not much cough. For one week was much worse, high fever, prostration, etc. Having grown too sick to be treated at a dispensary he was referred to the hospital.

The family history was negative as regards tuberculosis, and no other facts could be gleaned from the personal history, as the parents were Italians and not very intelligent. On admission the child was found well developed and well nourished with no important signs of disease except in his chest.

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* Read by title before the American Pediatric Society, Washington, D. C., May 12, 1903.

The examination of the chest showed coarse râles over the right lung; over the left lung there was dullness both in front and behind, and over the upper portion in front the percussion note was almost flat; loud, coarse friction sounds were everywhere heard. The respiratory murmur was everywhere bronchial in character, but over the upper half of the lung very feeble in intensity. Although there was no evident displacement of the heart, the flatness was so marked that an exploratory puncture was made in two places. No fluid was found. The case was therefore regarded as one of pleuropneumonia and its termination in empyema was anticipated. The usual routine hospital treatment for pneumonia was adopted. The child continued to look very sick; the cough was distressing; the respiration always very rapid, and occasionally there were attacks of slight cyanosis. The course of the temperature, the pulse and respiration record together with the leukocyte counts are indicated upon the chart.

For the first few days it will be seen that the temperature fluctuated irregularly between normal and 102.8° F. On the fifth day it took a sudden jump to 105° F. No marked changes in the physical signs occurred. The flatness over the upper lobe in front became gradually more and more pronounced, respiratory murmur was feeble, and friction sounds and coarse râles could be heard over nearly the whole chest.

On January 6th, although the physical signs remained practically unchanged, the leukocytes had gone up from 24,200 to 45,000. The presence of pus was now regarded as practically certain, and exploratory puncture again made, this time in the third intercostal space just outside the mammary line; a syringe full of thick creamy odorless pus was withdrawn.

Still under the impression that we were dealing with a sacculated empyema, preparations were made to remove the pus by incision. Chloroform was administered, but not to a degree to produce deep anesthesia. Desiring to drain the sac at the lowest possible point, a needle was inserted in the fourth intercostal space at the anterior axillary margin and pus found. An incision was then made at this point, but on opening the chest we came down upon the lung firmly bound by adhesions to the chest wall. The incision was extended upward and an opening made in the third intercostal space, but again the lung was met with as before.

The child bore the operation and the anesthetic badly; his color was so bad and pulse so weak that any further operative measures at this time seemed inadvisable. Examination of the pus drawn by puncture showed the pneumococci in numbers and a few staphylococci.

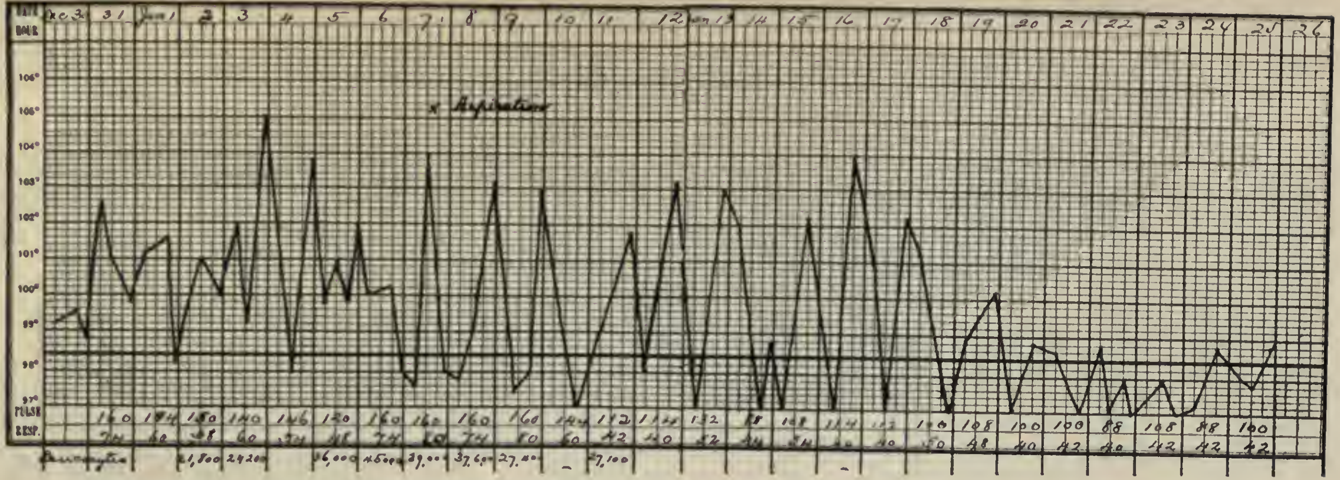
On the following day the chest was aspirated in the third interspace at a point midway between the axillary line and sternum and 1½ ounces of thick creamy pus were removed.

From this time there was steady improvement in the child's general condition although the temperature continued to fluctuate widely. On the 9th of January exploratory puncture was made in two places at the upper part of the left chest in front but no pus could be found. A further steady improvement in the physical signs together with a gradual fall in the leukocytes convinced us that no further accumulation of pus had taken place. Further exploration, therefore, was not made although the temperature continued without apparent reason until January 18th. At this time the signs were dullness over the left upper lobe and feeble respiratory murmur; but the râles had gone; all the abnormal signs were much less distinct than at previous examinations and were gradually disappearing.

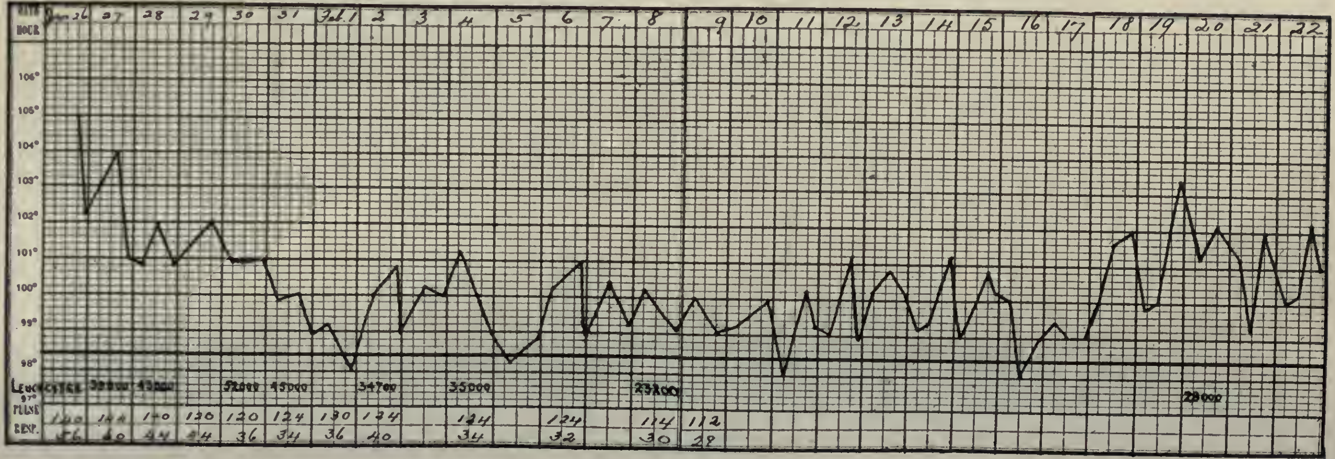
The boy remained in the hospital until March 15th. During the last month he gained three pounds in weight. The respiration continued somewhat rapid and he had a moderate cough evidently from the extensive pleuritic adhesions. On looking up the case subsequently it was learned that he had remained well for about a month after his discharge from the hospital, when he was taken severely ill with diphtheria and died in twenty-four hours.

CASE II.—ABSCESS IN THE LEFT LOWER LOBE TEN WEEKS AFTER ACUTE LOBAR PNEUMONIA. RECOVERY AFTER INCISION AND DRAINAGE.

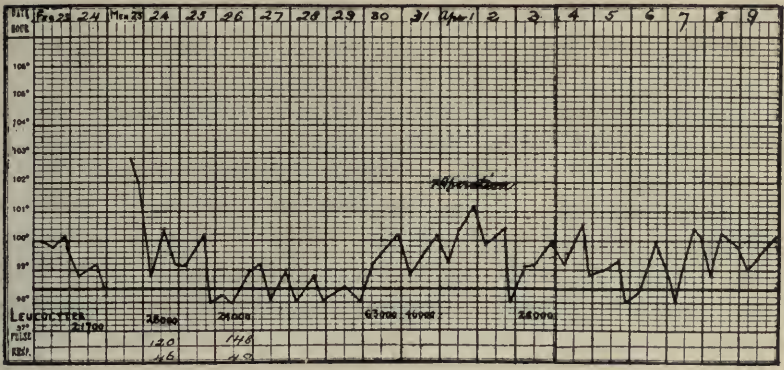
H. P., male, two years, ten months; admitted to hospital, January 26, 1903, with signs pointing to a lobar pneumonia of the left lower lobe. The symptoms and physical signs were fairly typical. He had been acutely ill for five days. The family history was negative as far as tuberculosis of any hereditary disease was concerned. The patient had had bronchitis when an infant of six months, but had not been otherwise ill up to the commencement of the present attack. His temperature on admission was 104° F., pulse 140, repiration 56, leukocytes 39,500.



ABSCESS OF LUNG. CASE I.—CHART SHOWING TEMPERATURE, PULSE, RESPIRATION, LEUKOCYTE COUNTS AND DATE OF ASPIRATION.



ABSCESS OF LUNG. CASE II.—CHART SHOWING TEMPERATURE, PULSE, RESPIRATION, LEUKOCYTE COUNTS AND DATE OF OPERATION.
(See Continuation of Chart on page 15.)



ABSCESS OF LUNG. CASE II.—CONTINUATION OF CHART.

By February 1st, the temperature had fallen gradually to normal, but remained so only a single day. The bronchial breathing disappeared but the dullness remained; and as the leukocyte count ranged from 35,000 to 50,000, it was expected that empyema would develop. The child was pale, had a poor appetite, looked badly, and lost weight. A slight, irregular temperature continued for the next five weeks. The physical signs remained practically unchanged; at no time was there marked flatness but always moderate dullness over the left lower lobe, together with feeble broncho-vesicular breathing, pleuritic friction sounds and coarse râles. We concluded it was probably a delayed resolution. On March 9th, he was removed from the hospital by his mother. The last leukocyte count on February 24th showed 21,700.

On March 23d, at the end of two weeks, he was re-admitted, having had in the interval an acute otitis which had ruptured, and the ear was discharging pus. From this time there was more temperature, prostration, and general evidence of illness. Examination of the chest showed no very great change in the physical signs. There was still present moderate dullness over the left lower lobe behind, with diminished voice and feeble breathing of a broncho-vesicular quality; a few friction sounds were heard; leukocytes 28,000. We felt tolerably sure now that empyema was developing, but greatly to our surprise the temperature soon fell to normal and remained there for four days. In spite of this there was no improvement in the symptoms and by March 30th, a rapid increase of the leukocytes to 63,000 convinced us that pus must be present. An exploratory puncture was made near the angle of the scapula with negative results. A second puncture at the same level, but a little nearer the spine, brought a syringe full of thick yellow pus. The examination of this showing only the pneumococcus, a diagnosis of sacculated empyema was made without hesitation.

On March 31st, the patient was given chloroform and further punctures made. It was not, however, until the fourth aspiration that pus was finally obtained, this being about one space higher than the site of the successful puncture previously. An incision was made at this point but we came down upon the lung firmly bound to the chest wall by old adhesions. A needle was inserted into the lung through the incision and pus found at a depth of about 1½ inches; there seemed now no possible doubt that we were dealing with an abscess of the lung. The firm fibrous adhesions which bound the lung to the chest wall obliterated the pleural cavity at this point, and made further operation comparatively easy. Following cautiously the line of the exploring needle an opening was slowly bored into the lung with a closed artery clamp, and a cavity reached at about the depth indicated, from which a gush of pus took place. About two ounces of thick creamy odorless pus was evacuated. The opening was enlarged with the finger and a rubber drainage tube inserted and the usual dressings of empyema applied.

The progress of the case from this time was uneventful. The discharge was quite abundant for four or five days; the drainage tube was gradually shortened, and after three weeks permanently removed. In another week the wound had healed completely.

The improvement in the child's general condition after the operation was immediate and striking. The cough disappeared, the boy gained rapidly in weight, and he was finally discharged from the hospital on May 25th; the only remaining signs being slight dullness and rather feeble breath sounds of a quality nearly normal. This child was heard from about four months after his discharge and reported to be well.

REMARKS.—Both of these cases followed acute pneumonia, the abscess being recognized about two and a half months after the attack of primary pneumonia. In Case II. the child was under observation almost continuously. In Case I., the history of the onset was fairly definite, and there can be little doubt as to the time when the process in the lung began. It is probable that a small abscess had been slowly forming for several weeks previous to its being recognized, and that it occurred in the center of an inflammatory area which had not resolved.

The bacteriological examinations of the pus are interesting. In both the pneumococcus was present; in one case it was associated with the staphylococcus; in neither case were tubercle bacilli found. These findings indicate that the abscess had been shut off from the bronchi by the products of inflammation, otherwise we would have had more evidence of mixed infection and doubtless foul pus. The presence of the pneumococcus gave additional weight to the supposition that we were dealing with an empyema. The fact that no pus was coughed up either before or after the operation also shows that no communication with the bronchus existed, although if the case had been allowed to go on it is probable that such would have been the result.

Perhaps the chief interest of cases like these is in the diagnosis. The literature of the subject shows that most of the cases of pulmonary abscess have been operated upon with the idea that a sacculated empyema was present, and indeed that was the first diagnosis made in both of my cases. In reviewing these histories critically, there are, however, a few points of differentiation which I believe may be of value in subsequent cases.

Percussion gives no clue to the nature of the disease. In both pulmonary abscess and sacculated empyema we have a more or less general dullness over the lobe, with flatness over a somewhat limited area. Again the voice and breathing sounds are practically identical in the two conditions. In both of my cases the presence of loud,coarse pleuritic friction sounds accompanying the signs on percussion and auscultation just mentioned, are I believe of much importance. Such signs could hardly exist if the accumulation of pus was in the pleural cavity. Another point of some value is the difficulty of finding the pus with the exploring needle, cr finding it at one time and later not finding it even when a puncture was made in the same intercostal space. This should be regarded as evidence that the pus is deep-seated; not only must the needle be inserted in the same space but it must follow the same direction in order to find the pus. An abscess the size of a hen's egg, situated somewhat deeply in the lung might easily be missed although a half dozen punctures were made into the lobe which contained it.

A slight displacement of the heart would be probable in nearly all cases of empyema unless the amount of pus is very small. Of course, it would not be present in an abscess unless the amount of pus were large. This, therefore, could not be depended upon as an absolute point of differentiation.

A pulmonary abscess and a persistent or unresolved pneumonia may easily be confounded by physical signs. If an abscess exists it is often in the center of such a pneumonic area. Percussion gives little definite information; dullness often marked is present in both conditions. The circumscribed area of flatness would be found only when the abscess was large or superficially situated. Breathing and voice sounds over an abscess are feeble or absent, while over an unresolved pneumonia they are usually bronchial in character, though sometimes feeble in intensity. Coarse friction sounds are likely to be found in both conditions, often over the entire lobe if it were the seat of the antecedent acute pneumonia.

The physical signs of abscess, therefore, are not very characteristic. Additional help may be obtained from the other symptoms, especially the presence of continued fever and a high leukocytosis. The temperature curve in abscess is not characteristic, but some continuous fever is almost certain to be present. Fever is more constant and altogether higher than is usual in an unresolved pneumonia. A leukocytosis of 15,000 to 25,000 is often present in unresolved pneumonia, but a count of 40,000 or 50,000 and especially a rapid increase in the leukocytosis points strongly to the presence of pus.

From tuberculosis the diagnosis of abscess may be difficult and in some cases impossible without a prolonged period of observation. It should be remembered that abscess most frequently follows an attack of acute lobar pneumonia, that the patient may have been previously in the best of health and without any exposure to tuberculosis. Wasting is a less frequent symptom, tubercle bacilli are not found in the sputum and the pus found by puncture contains pneumococci, but no tubercle bacilli.

The treatment in the cases reported was comparatively simple. It was expected that the abscess would re-fill in the first case after aspiration. Incision is certainly to be preferred as a general method of treatment, provided the child's general condition is such as to allow the operation. Inasmuch as the pleural cavity is generally obliterated by dense adhesions, as in both these cases, the opening in the lung can be made with very little difficulty or risk.

14 WEST FIFTY-FIFTH STREET.

SOME CASES OF INFANTILE NEPHRITIS.*

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An examination of the literature of nephritis in infancy reveals it to be surprisingly deficient; indeed, there seems never to have been published, so far as we have been able to ascertain, any account whatsoever of a systematic examination of the urine in infants with a view to ascertaining both its general character, quality, abnormal constituents under varying conditions of health and disease, combined with a pathologic examination of those children who have subsequently died from various causes. Not indeed until J. L. Morse's article upon "Nephritis in Infants" appeared has any systematic work been brought out. This excellent work of Dr. Morse, which was published during the time our own investigations were in progress, shows that nephritis does occur perhaps more commonly than is supposed in infants, though his investigations do not seem to have been combined with pathologic examinations.

One of the difficulties encountered in such clinical investigations is the unsatisfactory means, hitherto devised, of gathering the urine. One of us (Dr. Fry) has used a method, however, which is eminently suitable for the purpose. For males of course the simple methods employed by others were of use here, though even in this particular one may fail where others succeed. It is essential to keep the bottle which served as the receptacle for the urine tightly bound down by means of a gauze bandage to the inner side of the infant's thigh, and the child should be made to lie upon the side until the specimen is obtained. For female infants, on the other hand, the older method, originally from Germany, of gathering the urine by means of a sponge, is certainly not satisfactory, at all events for the microscopic examination; nor can one say that the method of obtaining the urine by means of the napkin is any better. In either case the microscopic examination must suffer; and we believe, moreover, that this in itself may explain the hitherto unrecognized fact of how frequent are casts in the urine of infants. The use of a catheter is equally unsatisfactory for infants in the earliest weeks of life.

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* Read at the meeting of the American Pediatric Society, Washington, D. C., May 12, 13 and 14, 1903.

For our purpose we find *reflex stimulation* upon the bladder or upon the meatus would often promote the excretion of urine with some force and the stream could be made to flow directly into the bottle held for that purpose. This stimulation can be obtained by the application of cold above the pubis or by the mere manipulation of the orifice itself, and in almost every case the result was eminently satisfactory.

Classification of Infants Examined.—One hundred infants, under three months of age, were examined in all. They were selected from different institutions: Foundling, Maternity and Grey Nunnery. In this way we were enabled to obtain infants fed in various ways—by the bottle, by the breast, or otherwise—and this excluded to some extent the influence of dietetics upon the condition of the urine in various cases. Of the 100 infants, sixty-five were artificially-fed; thirty-five were breast-fed. With each infant there were at least three samples of urine taken on different days for examination; thus making in all over three hundred total specimens examined.

Specific Gravity.—The specific gravity, which was examined in the various cases, showed, as one would naturally expect, great variations due to the many conditions that exist in feeding, etc. The figures are, therefore, of but little value, though perhaps some may be of interest.

The average for the total number of samples was	1,006.1
The average for the first 10 days	1,006.4
The average from the 11th to 30th day	1,005.1
The average from 2 to 3 months	1,007.5

It was certainly obvious that in the same infant increased specific gravity was associated with increased uric acid and great acidity in general. In one case where there was much uric acid present the specific gravity was 1,028; in many it was from 1,015 to 1,020; the lowest was 1,001; in other cases it was 1,003.

Reaction.—Sixty-four per cent. of all examinations showed acid urine, neutral 36 per cent.; there was none alkaline. It was observed that of the breast-fed children 78 per cent. were acid and 22 per cent. neutral; of the bottle-fed 91 per cent. acid and 9 per cent. neutral. It was noted, also, that the older the infants the more liable was the urine to be acid, that is, more than during the first ten days.

ALBUMIN.—In all instances the acetic acid and potassium ferro-cyanid tests were employed in addition to the cold nitric acid test.

Albumin was present in 19 out of 100 cases, varying from a trace to a very distinct ring by the cold nitric acid test. Of the 19 cases in which albumin was present 15 were bottle-fed children and 4 were breast-fed. Six of the 19 occurred in infants under ten days of age, 5 before the end of the first month and 8 during the second or third month.

CASTS.—Of these 19 cases with albumin, 17 had also casts, hyaline and granular mainly, a few epithelial casts but no blood casts. In 10 cases the albumin and casts were present in only one of the samples; in 7 other cases they were in two or more samples.

Of the 100 cases, however, 31 had casts, *i.e.*, 14 had casts without albumin. Of these 31, 22 were bottle-fed and 9 breast-fed.

URIC ACID.—This was in abundance in 26 cases. Of these there were albumin and casts in 14, and of the 12 remaining 10 had either albumin or casts, viz.: 9 had casts, 1 albumin. Casts were present in 23 cases.

It thus would seem that where uric acid was in abundance only a few, that is 3, escaped some evidence of nephritis or renal irritation. Of these 26, 19 died to our knowledge and autopsies were obtained on 7. In each of these there were uric acid infarcts and parenchymatous nephritis, and sections showed some marked degeneration of the convoluted tubules. In 3 of the cases there was in addition an acute interstitial nephritis. Apart from the 16 that died, 6 others had clinical evidence of nephritis, with marked edema about the face and limbs, as well as the signs in the urine.

With regard to the *relation of uric acid to nephritis* in infants, this was obviously increased in 26 cases. Of these 23 had casts, and of these 23, 16 died. Of the 16, autopsies were obtained in 9, 6 of which showed uric acid infarcts. Seven had uric acid in abundance and all of them had nephritis clinically; only 4 had no abundant uric acid with clinical nephritis. Whatever may be the relation of uric acid to nephritis one can say that the nephritis which occurs in infants is not alone associated with the toxic conditions incident to marasmus. That marasmus may often bring about a nephritis which, too, will be evident at autopsy, goes without saying; the fact, however, that identical conditions exist in the kidneys in children which were breast-fed and otherwise healthy, would indicate that the cause of the nephritis in many cases at all events is not due to the sole factor of marasmus. That it has been closely associated in some of these cases with the presence of marked increase of uric acid and that in many it is recovered from, may indicate a possible association between those two conditions, diseases which under favorable conditions are recovered from, without any serious permanent disturbance.

Bacteriological Impurities of Vaccine Virus.—An investigation on bacteriological impurities of vaccine virus, conducted by M. J. Rosenau, from the Hygienic Laboratory of the Public Health and Marine Hospital Service, reaches the following important conclusions: Of 190 dry points examined he found an average of 4,354 bacteria per point. A number of these points contained over 15,000 and one as high as 44,000 organisms. Of 244 tubes of glycerinated virus examined he found an average of 1,742 bacteria per tube. A number of these capillary tubes contained over 10,000 bacteria and one as high as 30,000. This is, of course, much more than a carefully prepared glycerinated virus should contain. He found the pus cocci and other bacteria, pathogenic for laboratory animals, in both the dry points and the glycerinated virus. He has demonstrated that some of the glycerinated virus marketed during the winter of 1901-02 contained an excessive number of bacteria, which decreased notably after a few weeks, indicating the sale of a "green" or unripe product; that is to say, the virus was not glycerinated a sufficient length of time before it was sold. It was also plain from his studies that too much confidence was placed by the producers in the germicidal power of glycerin. There is practically no difference between the glycerinated virus dried upon ivory points and that hermetically sealed in capillary tubes, so far as bacteriological impurities are concerned. It will be seen that there is practically no vaccine on the market free from bacterial contamination, although the product of some manufacturers is remarkably pure.—*Boston Medical and Surgical Journal.*

STREPTOCOCCUS DIARRHEA IN SAN FRANCISCO. (STREPTOCOCCUS GASTROENTERITIS.)*

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Under this heading may be described a variety of digestive disturbances which I observed among children here about two months ago. During the month of September (more particularly during the second and third weeks, which were characterized by hot, dry weather) there came under my observation a series of cases of diarrhea in children differing clinically from the ordinary diarrheal cases occurring here in several important respects. They were severer than usual for this locality, where the scourge of "summer diarrhea" is practically unknown. As a class they were accompanied by considerable elevation of temperature and some prostration. In a number of instances there were evidences of general systemic disturbance, which later investigations explained as being of a toxic origin. In nearly every case blood was passed with the movements at some time during the attack. The derangement could not be traced to the customary sources, such as errors in diet. Finally, each patient presented, in the inception of the attack, a certain definite, consistent train of symptoms.

The following case presents the essential characteristics of the class:—

Baby G., three years old; previous history good; never had severe illness. Family history and hygienic surroundings good. The baby, a girl, was taken sick on the fifth of September. Loss of appetite, slight fever, vomited once, constipation. At bed-time she received a teaspoonful of syrup of rhubarb.

September 6th.—Severe diarrhea, accompanied by pains in abdomen at times of defecation. Stools were green, slimy and malodorous. There had been ten to twelve stools daily for two days.

September 7th.—Diarrhea continued. Following a stool containing blood I was called and saw the child about 10 A.M. At that time she was in discomfort, no pain. Temperature 100° F., in axilla; pulse 130; respiration 36; liver and spleen slightly enlarged; spleen palpable below margin of ribs, slightly tender. Some tenderness all over abdomen, especially in hypogastrium and ileocecal region. Tongue harsh and dry, breath fetid. A stool, of pea soup appearance, consisted of greenish fecal matter, undigested milk, considerable mucus and a decided coloring of blood.

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* Read before the San Francisco County Medical Society, November 10, 1903.

A grain of calomel was administered in three doses. Four hours after the last dose a teaspoonful of castor-oil was given. Alcohol sponge bath to be given every six hours.

Diet:—Rice water, bouillon and diluted boiled milk. At 9 P.M. the temperature (axilla) was 100° F.; pulse 140; respiration 40.

September 8th.—1 A.M., axillary temperature 102.2° F.; pulse 140. Another stool containing blood. Irregular, superficial breathing and some twitching while sleeping. Ten stools in past twenty-four hours. 9 A.M., temperature 100° F.; pulse 132; respiration 40. One and one-half grains salol was ordered every four hours. 9 P.M., temperature 100° F.; pulse 128.

In past twenty-four hours four stools; one contained blood and sloughs of mucous membrane. Urine showed a trace of albumin. Diazo reaction negative. Smear from feces showed numerous cocci; no bacilli noted. Culture on agar yielded a pure growth of streptococci. Stopped milk food.

September 9th.—9 A.M., temperature 101° F.; pulse 128; 9 P.M., temperature 100° F.; pulse 112.

In past twenty-four hours four stools, even consistence, yellow color. General improvement in subjective condition and in appearance.

September 10th.—9 A.M., temperature 98.8° F.; pulse 116. Ordered bismuth subnitrate, two and one-half grains, one grain salol every four hours. 9 P.M., temperature 98° F.; pulse 100.

Urine contains trace albumin; diazo reaction negative. Culture from urinary sediment did not show streptococci. Five small stools; even consistence; yellow.

September 11th.—9 A.M., temperature 97° F.; pulse 96. From this time fever was absent; the pulse receded to 88 where it remained. The stools were formed but continued to be more frequent than normal, numbering four or five daily. After another week, during which time the diet of bouillon and farinaceous food was continued, they diminished to two daily. But some mucus was present for several weeks.

October 3d.—Albumin had disappeared from urine.

October 18th.—Smear of feces showed great variety of bacteria. No streptococci were recognized.

About this time in my private practice and in the Dispensary Clinic of the University of California I treated 9 other cases which presented the same clinical picture. The symptoms were primary constipation, followed by diarrhea, the stools being characterized by the presence of mucus and blood and having a foul odor; fever of a remittent type and general prostration were present. The cases were obstinate but all finally recovered under treatment with calomel, salol, bismuth and tannigen. The diet seemed to influence the course of the disease decidedly, the cases progressing more favorably on a diet devoid of milk than when milk was given in any form. After the acute stage of the disease, egg and farinaceous food were well borne. Tannigen in the later stages of the disease was used with beneficial results. Castor-oil was administered at intervals of four or five days to sweep out the intestinal canal. Tenesmus was not a constant symptom so enemata were not employed in all cases. When employed they did not perceptibly influence the course of the disease but in a few cases enemata of boric acid solution or of lead water were given twice daily.

Concerning the infectiousness of these cases I may say that the five-year-old sister of the child, whose history is reported above, sickened one week after the first child. She repeated the symptoms of the reported case with some modifications. The temperature was lower and the prostration less marked. Her recovery was quicker. In the cultures from her feces streptococci were plentiful but were associated with other varieties of micro-organisms. In all of the cases where cultures were made streptococci were present but only in the instance related above were they found in pure culture.

In one of his cases E. Libman,[1] of New York, found streptococci in pure culture, and Hirsh,[2] of Baltimore, has likewise described a case of streptococcus enteritis. Booker[3] in 1896 made a careful study of the bacteriology of summer diarrhea. He identified the streptococcus in a large proportion of his cases but never alone. He placed the cases in which streptococci were present in the severest grade, graver in proportion to the number of streptococci present, and he stated that toxic symptoms were indicative of the streptococcus infection. He considered the presence of streptococci of sufficient importance to entitle such cases to a separate class, recognizing three varieties of summer diarrhea: dyspeptic, streptococcus, and bacillary (including under the last caption those cases apparently due to bacteria, but in which streptococci were absent.) He found streptococci on the surface of all the divisions of the intestine, especially in the ileum and colon, as well as in the ulcers, where such existed.

The ileocecal region is the part most intensely affected, but the entire length of mucous membrane of the gastrointestinal tract is more or less involved. The lesions present all stages of the inflammatory process from hyperemia and loss of epithelium to infiltration, ulceration and necrosis. The ulcerations may extend down to the muscularis mucosæ. They are most often found in the ileum and colon. The lesions in the stomach, duodenum and jejunum are slight.

Koplik[4] discusses streptococcus enteritis under the general caption "enterocolitis," and again under "dysentery," while Rotch[5] includes all of the more marked and graver lesions of the intestines under the heading "ileocolitis." Escherich,[6] Marfan,[7] Finkelstein,[8] Shiga,[9] Valenti and Celli[10] and others have studied the bacteriology of the gastrointestinal disturbances of children with varied results and conclusions. It is agreed that bacteria are an etiological factor in these cases. But several varieties of bacteria have been described, to each of which its discoverer wishes to ascribe all cases of this class.

It would seem to be the fact that no single bacterium is the cause of all such cases but that a number of varieties each alone and by itself; the conditions being favorable and it securing a foothold in the gastrointestinal tract, may cause the lesions accompanied by diarrhea and which have heretofore been described under the names dysentery, ileocolitis, enterocolitis, summer diarrhea, gastroenteritis, etc. At the present time there may with safety be placed in such a class of bacteria a bacillus of the colon group, the pyocyaneus bacillus[11] and the streptococcus. The rôle played by amebæ must also be considered.

From a clinical standpoint the presence of other microorganisms at the beginning of such an attack, even should they be pathological themselves, is of little or no importance. When in these cases a virulent germ, as for example the streptococcus or pyocyaneus bacillus, invades the intestine it dominates the field if it does not entirely preempt it, and relegates such factors to an insignificant position in the background.

Concerning the mode of ingress of the bacteria into the digestive tract two possibilities immediately suggest themselves, both of which probably are operative. First, the organism may be habitually present and at an opportune time become virulent. Second, the organism may be ingested with the food.

These enteric disturbances occur as a rule in infancy or early childhood when the system has little power to resist bacterial invasion. They occur in summer when the excessive heat depresses the vital powers, and the atmospheric conditions favor bacterial activity, and exercise a deleterious effect on food, especially milk. Errors in diet, the ingestion of tainted or fermented food, or some other factor may cause gastric or intestinal disturbance which ordinarily would subside when the irritant was removed; but the circumstances being auspicious, a locus minoris resistentiæ existing, the germ secures a foothold and causes the serious train of disorders existing in bacillary gastroenteritis.

Various bacteria may be ingested with the food. From the sediment of a specimen of milk obtained here at the time of the streptococcus cases described above cultures were made. These furnished a prolific growth of bacteria, among which streptococci were recognized. Hirsh recovered streptococci from the vomitus of a case under his observation.

The diagnosis of streptococcus enteritis, as of bacillary gastroenteritis in general, can be made positively only with the microscope. There may, as in one of my cases, be difficulty at first in differentiating from typhoid fever, but the Widal and diazo tests coupled with observation of the temperature chart will ordinarily soon obviate this obstacle. Bacillary infection of the digestive tract should be suspected when in children, especially in hot weather, severe diarrhea occurs, without a history of error in diet or other direct cause being known. If, in addition to this, toxic symptoms and persistent elevation of temperature are present there is a likelihood of such an etiology, and if the trouble occurs epidemically there should be prompt recourse to the microscope, which together with cultures offers a positive method of diagnosis.

In general, bacillary gastroenteritis is a severe disease, as is attested by the great mortality in the cases of which we have reports. Even the pyocyaneus bacillus, formerly regarded as of a benignant nature, is charged with a remarkable mortality when once firmly lodged in the digestive tract in childhood. Although Booker classifies streptococcus infection as the most virulent form of summer diarrhea, it is of interest to note that the cases observed in this locality, while severer than the ordinary local diarrheal disturbance, ran a comparatively benign course. All of my cases ultimately recovered; nor have I heard of a fatal termination in cases presenting a similar clinical history and occurring about the same time in the practices of numerous other physicians whom I interviewed on this subject.

Since making the above reported observations I have read the discussion of "Summer Diarrhea of Children" held before the American Pediatric Society in May of this year and have received, through the courtesy of Dr. Knox, a report of the work recently done on this subject in the Thomas Wilson Sanitarium.

It has been of extreme interest to me to note that my conclusions relative to the agencies operative in this locality as well as my classification and deductions regarding the bacillary cases are in almost perfect accord with the views expressed by several of the eastern clinicians, especially Koplik and Booker.

One of my colleagues, having made clinical observations similar to those reported above, secured cultures of Shiga bacilli from the East and made aggutination tests with negative results.

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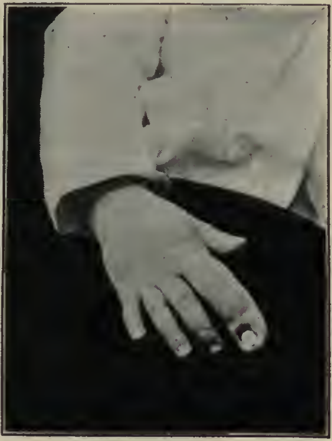
Clinical Memorandum.

CONGENITAL ASYMMETRY OF THE INDEX FINGER.

BY A. FRANK TAYLOR, M.D.,
Castle Creek, N. Y.

Leonard Howard, who is now three and one half years of age, was first seen by me at his birth. He was born at full term after an uneventful labor and weighed eleven pounds. His parents are both Americans and of good habits, industrious, and not consanguineous. The father is forty-five and the mother is thirty-five years old.

The nurse noticed the unique appearance of the index finger of the right hand, and called my attention to it. Upon examining it, I found it both larger and longer than is normal.


CONGENITAL ASYMMETRY OF INDEX FINGER.

This child is the youngest of a family of six children and is both mentally and physically superior to the others who are all of average ability. At the present time the finger shows the appearance represented in the photograph (see cut). The abnormal finger is three inches long and measures two and a half inches around at its thickest part. The normal finger is two inches in length, and is one and a quarter inches in circumference. No other part of the body is abnormal.

Aside from the uncouth appearance of the finger it is a great hindrance to the perfect use of the hand as he cannot grasp anything with it, the distal joint being useless, and in my opinion the hand would be rendered much more serviceable and comely, if the finger were removed.

A SECOND ATTACK OF SCARLET FEVER WITHIN EIGHT MONTHS.

BY W. A. DUNCKEL, M.D.,

New York.

On April 1, 1902, I was called to see a male child of three years. The temperature was 103° F., and there was an erythematous eruption on the trunk sufficiently characteristic to make the diagnosis of scarlet fever highly probable. The onset had been sudden, there had been vomiting and the illness had been of twelve hours' duration. At the time there was no history of exposure to scarlet fever, but nearly a year later it was ascertained that his nurse, a recent acquisition, had been nurse to a child that had had scarlet fever and was still desquamating when she left her position and found employment as nurse for this boy.

The case was typical. Desquamation began on the tenth day, was moderate over the trunk and thighs and persisted on the fingers more than three weeks. The urine showed a transient albuminuria in the active febrile stage. A slight temperature persisted after the tenth day, due to a moderate swelling of the cervical lymph nodes. Recovery was perfect.

On November 1st of the same year I was again called to see the child. He had a temperature of 104° F., and was covered with a bright erythematous rash. About the mouth there was an area of unaffected skin. As it was evening it was difficult to detect any punctate appearance to the eruption; this, however, was pronounced in the morning. The onset had been sudden, the child having vomited and been feverish during the night. The picture of scarlet fever was so well defined that, had the child not had a pronounced attack of the disease in the spring, I should have felt little hesitation in making a diagnosis of scarlet fever. As it was, it seemed more reasonable to believe that the eruption was associated with a toxemia of gastrointestinal origin. To my surprise the eruption did not fade until the fifth day. In the meantime the heavy yellow coating on the tongue had desquamated, giving the strawberry appearance. The tonsils were the seat of considerable inflammation and the anterior cervical lymph nodes were swollen.

On the seventh day desquamation about the neck, upper portion of the chest and axillæ was noted. This was complete in three days and no further desquamation was seen, although the case was under observation for six weeks. About the fourth day of the child's illness both the mother and nurse had swelling and redness of the fauces and tonsils, chilly sensations, headache, pain in the lumbar region, moderate prostration and febrile disturbance. Neither one developed a rash. The child made an uneventful recovery in four weeks. There never has been a sign of renal inflammation since. There can be no doubt that the first attack was scarlet fever. Neither can there be any doubt, with the exception of some irregularity in the desquamation, that the second attack would have been considered scarlet fever had there been no previous history of this affection. The two attacks varied decidedly as to the desquamation, while the eruption was less pronounced in the first attack. It seems less difficult to believe that the immunity conferred by one attack of scarlet fever should be so short, as to permit a second invasion of the same disease within eight months, than the alternative—that there can be two diseases so nearly alike in every respect and varying only as to desquamation and severity of eruption. Holt mentions Kinnicutt's case of a boy of five years who had two attacks in eight months and Pritchard's case which had three attacks of scarlet fever in the same hospital within two years. Ashby and Wright note the case of a boy of six years who had a typical attack beginning June 26th, and who had after complete recovery a second typical attack beginning August 21st of the same year.

Writers agree that second attacks of scarlet fever are rare.

A Rare Case of Measles.— Bernhard Machold (*Münch. Med. Wochenschr.,* April 14, 1903) reports a case of measles in which, fourteen days after the initial eruption, there appeared over the entire body a bluish macular eruption, which lasted for three days, and which was followed by slight desquamation. The origin of the eruption is somewhat obscure, although it is most probable that it is to be regarded as a recurrent attack of the rubeola. It was certainly not due to the action of any drug or other substance ingested, since the diet of the patient had been carefully watched and no medicine had been administered. During its presence there was no rise in temperature or any constitutional symptoms.—*Medical Record.*

ARCHIVES OF PEDIATRICS.

JANUARY, 1904.
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NERVOUSNESS IN CITY CHILDREN.

One of the most prominent features of medical practice in large cities, and especially among the children of the better-to-do classes, is the increasingly frequent occurrence of nervous conditions of various kinds among growing children. These conditions not only produce symptoms in themselves, but lead to the exaggeration of the symptoms of other ailments, and frequently make diagnosis more difficult than it would otherwise be, because of the atypical symptoms they introduce. Even slight febrile conditions in nervous children give rise to a severe rigor, to mental symptoms bordering on delirium and to functional disturbances, especially in the gastrointestinal tract, the kidneys and the skin, which are unwarrantably severe. As a matter of fact the height of the fever itself depends not a little on the child's nervous condition and the resistive vitality that enables it to withstand thermic conditions. Small disturbances of heat equilibrium produce a distinct rise of temperature that may persist for several days.

It is very evident that this supersensitiveness of the nervous system is due to unnatural conditions in child life. If there is anything that is typical of the young animal and the young child it is the restlessness that characterizes them, so that normally only a small portion of their waking state is passed at rest. This is, of course, an inconvenient thing in modern city life. Children cannot be allowed to run around the house. In apartments they must be kept quiet, or the complaints of neighbors will make life intolerable for the rest of the family, and at most a few hours a day of outdoor air and play can be secured for them. Only too often this socalled playing outdoors is really a rather solemn walk to the park with a nurse who has instructions that the children must not be allowed to associate freely with other children, lest they should be exposed to some contagion. There are those who might say that the tender solicitude of the mother in this regard is in many instances not a manifestation of care for either the health or the morals, but rather for the presumed social standing of her children. This is unfortunately not the only drawback that supposed social obligations impose on children in city life. The child is not a society being but a social animal needing playmates.

Nature did not give to children the desire for constant movement leading up to healthy tiredness without an excellent purpose. As a matter of fact the growing, developing muscles are constantly nagging the child into activity. The end of such activity is very evident, since the healthy exercise of function encourages proper development. When growth continues without the safety valve of almost constant motion there are thrown into the system a number of highly organized products, irritants for the nervous system, that would normally be consumed by the increased processes of oxidation, during healthy exercise. The unbending effect of play is of itself the best possible safeguard against that nervous tension so apt to be characteristic of the modern child. In just so much as we can persuade mothers to allow their children really and truly to play and not merely to walk and pose as clothes forms for display, shall we succeed in preventing many of the nervous troubles that are now so manifest in children.

There is, of course, another defect in the bringing up of children that is quite as important as the neglect of their necessity for play. That is their need of simple, easily digested food. Too often, especially where there are but one or two children in the family, the child begins to come to the table with its parents very early in life. It is impossible under these circumstances to limit it to food that is entirely suitable for it. The highly spiced viands, the sweets, the tempting desserts, the abundance of meats and the large variety of food likely to be prepared for older people among the wealthier classes, are sure to make its own simple food seem very insipid to the child. Milk and cereals, bread and butter and eggs become as insupportable under these circumstances as they are to the adults around them.

The most stringent simplicity of food is the first requisite. Until six years of age children should have very little meat and, until the age of twelve, meat not more than once a day. The only way to accomplish this purpose properly is to have the children eat always by themselves, or at least of food especially prepared for them. Among the poorer classes this restriction is not so necessary because of the simpler food prepared for the family, though even here there is the need for insistence as to the evil effects of coffee, tea or other nerve stimulants, and as to the necessity for the avoidance of condiments and of the over use in meats except according to a stated regimen.

There is no doubt that a prominent, though often unrecognized, factor in the production of the nervousness of city children, is the present system of teaching in the public, and consequently also in other, schools, which assumes that education is proportional to the amount of information, useful and otherwise, which can be crammed into children. In order to secure the co-operation of the children in this mistaken notion, competitions and examinations are devised that to a sensitive, ambitious child become eventually a positive nightmare of anxiety. The child's vital force during its developmental period is too precious to be wasted in this way. If to adults it may be said with perfect truth at times of strain, "You have not brain enough to run your business and your nervous system," surely the same must be said to growing school children whose nervous systems are accomplishing the feat of their lives in directing the evolution of cells all over the body. Physicians are the only ones who seem properly to realize this and their voices must be raised in protest and their intervention must protect those who early exhibit signs of nervousness.

Nervous disorders must be prevented rather than cured. As far as possible the artificiality of city life must give way, for the children at least, to a return to nature—spontaneous play in the open air, plain living and long hours of sleep after healthy fatigue. Parental attempts at the encouragement of precocious solemnity in children, by display and imitation of their elders, must be firmly discountenanced. There is in the bringing up of children the one opportunity for the present-day physician to assume the important rôle of domestic confidant and adviser so long and so satisfactorily held by the old-time family physician. For the sake of the rising generation there is here a place to be filled that must not be neglected or it will prove a costly oversight.

Concerning the Socalled Physiologic Salt Solution.—F. Engelmann's (*Deut. Med. Wochenschr.*, January 22, 1903) investigations demonstrate that neither the 0.6 per cent. nor any other salt solution except the 0.9 per cent. solution can be considered as isotonic with human blood-serum. In all cases in which formerly on account of false suppositions the use of solutions varying from 0.5 per cent. to 0.75 per cent. has been recommended (whether at the sick bed as infusion, or in the laboratory as preserving fluid) the 0.9 per cent. solution should be employed.—*American Medicine.*

Society Reports.

THE NEW YORK ACADEMY OF MEDICINE.—SECTION ON PEDIATRICS.

Stated Meeting, November 12, 1903.

HENRY HEIMAN, M.D., CHAIRMAN.

DR. EDWARD MILLER presented a case of

MYELOGENOUS LEUKEMIA.

The patient was a boy of eleven years with a negative family history, and a personal history of having some diarrhea, and becoming pale, coincident with enlargement of the abdomen. There was no history of a tendency to hemorrhages. The change in the abdomen had first been noted about a year and a half ago. Examination in September showed a distended abdomen and a spleen extending from the seventh rib in the axillary line to the level of the crest of the ilium. The blood examination showed hemoglobin 63 per cent., 3,976,000 red cells, and 432,000 white cells, with 20 per cent. neutrophile myelocytes and 0.75 per cent. of eosinophile myelocytes. A later blood examination showed 54 per cent. of hemoglobin, with 3,232,000 red cells and 347,400 white cells. The differential count showed 16.4 per cent. of neutrophile myelocytes and 4.8 per cent. of eosinophile myelocytes. Polymorphonuclears about 60 per cent., lymphocytes about 10 per cent., mast cells from 5 to 10 per cent.

DR. D. STUART DODGE JESSUP said that this was the first case of myelogenous leukemia that he had seen in a child. The mast cells were found to represent 10 per cent. of the white cells, and the polynuclear neutrophiles constituted 60 to 65 per cent., instead of about 50 or 55 per cent., as was the case in myelogenous leukemia in adults. There were 20 per cent. of myelocytes instead of 36 per cent. as in most adult cases.

NODULAR TUBERCULOSIS OF THE SKIN. (ÉRYTHÈME INDURÉ OF BAZIN.)

DR. L. E. LAFÉTRA presented this case, occurring in a boy of two years. Last November the boy was circumcised, and five weeks afterward a swelling appeared on the middle phalanx of one of the fingers of the left hand. Shortly after this a red spot appeared on one cheek, and later on broke down. When seen in June of the present year, there was some bronchitis, and also slight enlargement of the liver and spleen. There was a bluish patch on each cheek, and from the one on the right cheek serum exuded. Palpation detected the presence of many similar nodules, for the most part better felt than seen, and covered by bluish skin. They were most numerous in the skin covering the back and sides of the calves of the leg but found also on the thighs, back and forearms. In July the dactylitis suppurated, but the examination of the pus was negative. A mass was removed from the left hand about six weeks ago, and this showed, on examination, not only tubercular tissue but a few typical tubercle bacilli.

Dr. Henry Koplik said that such cases were quite rare in this part of the world. They were more accurately described as a scrofulosis.

Dr. Jacob Sobel said that this was the first case of the kind that he had seen here in a child. The disease was more apt to affect young women, and the site of election for the lesions was the lower third of the calf.

Dr. LaFétra said that he had been able to find in the literature only one other case in a child on record, and that was in a boy of about nine years, and in only one other case had tubercle bacilli been demonstrated. Of particular interest was the occurrence of the nodules all over the body, and the association with tuberculous dactylitis.

CONGENITAL HEART DISEASE.

Dr. Henry Heiman presented a little girl suffering from congenital heart disease. The bluish tint was quite marked, as were also the evidences of pulmonary stenosis.

THE CONSTITUENTS OF THE LAYERS OF A QUART OF MILK.

Professor John S. Adriance gave a verbal *résumé* of his study of this subject. He said that the top layer of a bottle of milk, when delivered to the consumer sixteen hours or more after milking, contained a large proportion of fat, and this quantity was approximately the same from day to day. It was not true, as stated in most books, that the composition of cream was the same as that of milk except that it contained more fat; on the contrary, the proportion of sugar, proteid and inorganic matter in cream was much less than in the original milk. The milk that he had used in analyzing the different layers had the following composition: fat, 5.02; sugar, 4.82; proteids, 3.56; ash, 0.74. The proteid material was held there in combination with inorganic matter. As might be expected, the first ounce gave the highest percentage of fat, while the ninth ounce contained approximately 1 per cent. of fat. The last ounce contained less fat, and, therefore, a larger amount of all the other constituents. It was evident, then, that skimmed milk contained a higher percentage of proteid than the original milk; and he desired to specially emphasize the fact that the proteid material decreased as the fat increased, and that the inorganic salts were likewise diminished.

THE FUNCTION OF MATERNAL MILK IN DEVELOPING THE INFANT'S STOMACH.

DR. HENRY DWIGHT CHAPIN read this paper. He said that both human milk and cow's milk were acid, but an indicator more sensitive than litmus must be used to determine this. The proteids of cow's milk had been found not to be identical with those of human milk; they were not merely a mixture of caseinogen and lactalbumin as formerly supposed. Human milk supplied a special form of proteid. In all forms of animal life the young were nourished from the mother's own body, or else the proper food was brought to them. The digestive tracts of all animals were alike simple in the early stages of fetal development. The stomachs of most animals were not the same at birth as at the time of weaning. The colostrum, the first secretion of the mammary gland, was totally different from milk. It was well known that in a few days after birth normal milk replaced the colostrum. Milk formed curds in the stomach, which was not the case with colostrum. The function of the stomach was to act as a food reservoir and break down proteid material. Very little complete proteid digestion took place in the stomach. As the infant's stomach developed, longer intervals between the feedings became necessary. During the colostrum period there was very little secretion in the stomach. As soon as milk began to displace colostrum, an abundant secretion of rennet appeared in the calf's stomach. The first function of the milk was to fit the stomach for passing soft food into the intestine. As soon as a little acid was secreted in the stomach it combined with the curd to form a definite compound, which was readily attacked by the pepsin. As fast as the gastric glands developed they found work awaiting them.

Mother's milk adapted itself to either a weak or a strong infant. In the change from the colostrum to milk the character of the proteid supplied was altered, and the infant's digestive secretions changed at the same time for a specific purpose. The proteid of the milk of the lower animals did not perfectly fit a baby's stomach. The proteid of cow's milk did not fit the baby's stomach. In the cow, digestion was principally gastric; on the other hand, human milk did not form tough curds, but fine flakes. Part of the benefit of heating milk lay in altering the character of the milk and preventing the formation of acid. No artificial food could be made that would automatically adapt itself to the infant as did maternal milk. The infant's digestive secretions determined how and when digestion should take place. Success had not followed rigid adherence to any rule of feeding.

Dr. R. G. Freeman said that while he had been interested in the results of the analyses of the various layers of a quart bottle of milk he did not think the results warranted any alteration in our present methods of modifying milk for infant feeding, because the dilutions employed made it unnecessary to take cognizance of these small deviations. It was important not to make use of formulas containing low percentages of proteid for any great length of time. Cow's milk could be fairly adapted to the infant's needs by extracting the whey, thus obtaining a lactalbumin milk.

Dr. H. Koplik said that Dr. Chapin had quoted in his paper the oft-repeated statements of the books to the effect that colostrum had a distinct cathartic function; nevertheless, he had been unable to find any recent truly scientific data in support of this view. Against it was the common experience that new-born infants were frequently constipated, as well as the fact that the small quantity of colostrum ingested made it necessary that the colostrum should be actively cathartic, if it were going to exert any such effect on the infant. He could not agree with the statement that the quantity of milk secreted in the breasts steadily increased, and that, in consequence, the intervals between the nursings were naturally lengthened. He only knew of two sets of experiments to determine the quantity of milk delivered by the human breast. In one set it was found that the quantity of milk remained about the same from the second month to weaning; the other set of observations showed a gradual increase in the quantity of milk secreted from birth to the period of weaning. His clinical experience also led him to take exception to the statement that the milk adapted itself to the infant's stomach, and the infant adapted itself to the breast milk. It should not be forgotten that the proteid of cow's milk and of breast milk were not identical. Sixteen times as much phosphorus was voided by a baby fed on cow's milk as by an infant at the breast.

Dr. J. E. Winters said that as long ago as the summer of 1898 he had asked Professor Adriance to make some milk analyses for him, because clinical experience had led him to believe that the upper layers of milk in the bottle contained very little proteid. At that time, Professor Adriance had assured him that all analyses tended to show that the upper layer contained the same quantity of proteid as the rest of the milk. He had had several series of milk analyses made for him since then by Dr. Lederle and by Mr. Henry C. Sherman of Columbia University, and it was a satisfaction to him to learn now from what Professor Adriance had said this evening, that his own views, advanced five years ago, and based solely on clinical observation, were correct. Whenever the proteids diminished there was a corresponding reduction in the inorganic constituents. It was most important to remember that the prolonged use of a food containing a small percentage of proteid always led to the development of rickets; indeed, he would go so far as to assert that it was the *only* cause of rickets. The addition of lime-water to milk was a time-honored custom, yet he did not believe this was done for the purpose of rendering the milk alkaline. In the summer season the lime-water should represent one-fourth the quantity of the food.

Dr. Henry L. Coit, of Newark, N. J., said that he had learned that every baby's stomach was a law unto itself. It required much experience to learn the art of properly individualizing the feeding of infants; and, after all, it seemed to be rather an intuition than the application of precise scientific rules. The fat content of the lower layers was more uniform than in the higher ones. He was not yet convinced that the difficulty of digesting proteids was the chief bar to success in infant feeding. The digestion of cow casein had not, in his opinion, received enough attention.

Professor Adriance, in closing, said that as the fat increased, the other ingredients decreased, but the ratio was not the same for each of these other constituents. One should aim at accuracy in milk modification, because bedside experience had shown the importance of a variation of only 0.25 per cent. in the proteids. Some years ago he had demonstrated that the percentage of proteid in cow's milk was not four, as usually stated, and Richmond, of England, as a result of thousands of milk analyses, had indorsed this statement, adding that cow's milk usually did not contain more than 3 or 3½ per cent. of proteid.

Dr. Chapin in closing the discussion stated that, he was disposed to think that if Professor Adriance had not used so rich a milk for his analyses the result would have been different. In any case, the result was only from one assay. Expert chemists found it difficult to accurately determine the proteids, and these substances were quite complex in milk. The theory upon which the use of lactalbumin was advocated he did not believe to be correct. Nature craved nucleoalbumin for tissue-building; it was quite possible to starve on soluble albumins. The complexity of this interesting subject should make us cautious about indulging in generalizations, particularly on the basis of one analysis. Dr. Koplik had evidently misunderstood him with regard to the quantity of milk secreted in the breast. He had not contended that the quantity of this milk varied, but rather that the digestive secretions of the infant varied. He had prepared this paper because he was of the opinion that this whole subject should be studied more from a biological than from a chemical standpoint.

Note on the Detection of Raw Milk and Formaldehyd. —By J. E. Lane, F.R.C.S. (*British Medical Journal,* March 21st). The author has observed the following striking reaction of raw milk, which may prove useful in the examination of sterilized or scalded milk. On treating raw milk with a solution of orthomethylaminophenol sulphate, and then adding hydrogen peroxid, a very vivid deep red color is produced. The red color is so strong and pronounced that as little as 1 per cent. of raw milk, if added to heated milk, may be readily detected. Dilute acids or alkalies, borax, or formaldehyd do not affect the reaction. Milk kept at 70°C. for one hour reacts readily; if heated to 75°C. for half an hour no reaction is obtained. The reaction is probably caused by the presence in milk of an oxidizing enzyme destructible by heat. Casein has nothing to do with it. The same reagent may be used as a test for formaldehyd. On adding nine or ten volumes of milk to 1 per cent. solution of the salt, and allowing the mixture to stand, a pink color is gradually produced in the presence of formaldehyd. This latter test is not of any great value, however, as other substances give the reaction.—*Medical Record.*

THE PHILADELPHIA PEDIATRIC SOCIETY.

Stated Meeting, Tuesday, November 10, 1903.

Dr. D. J. Milton Miller, Chairman.

Dr. Albert P. Francine exhibited a patient with

MARKED DIASTASIS OF THE RECTI MUSCLES.

The patient was a male colored baby, fifteen months old, that showed the signs of advanced rickets, including the rachitic head, open fontanel, anterior bowing of the tibia, enlarged epiphyses, etc., and was exhibited on account of the marked diastasis of the recti muscles. While this condition is not rare in infants of this type, Dr. Francine had not previously seen so marked a case, the diastasis being fully the width of three fingers. The chest was small and rachitic; the abdomen full and prominent. It had been tender and painful to the touch, and the baby had suffered with some gastrointestinal disturbance with constipation, which had improved under treatment. The baby is now enjoying fairly good health, and its nutrition seems good.

Dr. Francine thought the condition of the recti muscles in cases of this kind is congenital in the sense of having originated at or soon after birth. This child had been observed a year previously, when the condition was equally well marked. It was thought by the speaker to be due to a want of tonicity on the part of the abdominal muscles, that was a part of a hereditary predisposition to weakness of both the bony and the muscular system of the body. This, in some cases, eventually give rise to the visceral ptoses so frequently noted in later life, particularly in women.

Dr. Hamill exhibited, in conjunction with Dr. Francine's case, a colored boy, aged fifteen years, who had been under observation in the Polyclinic Hospital for two years. When he first came to the dispensary he was much emaciated, had severe intestinal indigestion, his abdomen was enormously distended and the separation of the bellies of his recti muscles was extreme. Under improved conditions of diet and exercise, and by abdominal support, the muscles had developed, the separation had become less marked, the intestinal symptoms had practically disappeared and the boy had gained rapidly in weight. The persistence of the extreme separation in this case was what had induced Dr. Hamill to present him. The patient had had extreme rickets in infancy.

Dr. Hamill thought diastasis of the recti muscles very common as a manifestation of rickets; especially in colored children. In a patient but little older than the one just exhibited, recently seen by Dr. Hamill, there was a separation of the recti muscles almost as marked as in the case presented.

He believed that the lowered tone in the muscular coats of the stomach and intestine caused deficient motor power, defective digestion, fermentation, the formation of gases, and consequent gastric and intestinal distension. The resulting pressure against the poorly nourished and weakened abdominal muscles produced the separation of the recti muscles. He was not in accord with Dr. Francine in considering the condition congenital.

The Chairman, Dr. Miller, said that he was quite in accord with what Dr. Hamill had said in regard to the frequency of minor degrees of this condition, especially in rachitic infants. He thought Dr. Francine's case one of the most marked that he had ever seen. Those seen by the speaker were due to rickets; that is, they were acquired, and not congenital.

HODGKIN'S DISEASE IN CHILDREN.

Dr. Edwin E. Graham had expected to present a patient with Hodgkin's disease, but the child had shown such a rise in temperature that it had not been considered safe to remove him from the hospital. Dr. Graham, therefore, merely exhibited some photographs of his patient illustrating the condition described.

Dr. J. P. Crozer Griffith thought it interesting that Hodgkin, in describing the disease that bears his name, mentions some cases occurring in children. In medical literature in general, the disease is very uncommon in early life; although there are cases recorded that occurred in infancy. The question always arises whether these cases are not, in reality, cases of tuberculosis.

Dr. Graham said that Sternberg has recently done some extensive work with cases of Hodgkin's disease, and has come to the conclusion that the majority of these are tubercular in origin. Dr. Musser, also, has lately assented to this conclusion. Dr. Graham does not think it possible, either antemortem or postmortem, to prove the correctness of this view, except by inoculation-experiments; because the changes in the lymph nodes, and the histologic changes, are not such as to render it possible to say whether or not they are tubercular. Therefore, the decision whether the disease is or is not tubercular in this case will have to depend upon the result of future inoculation-experiments.

CONGENITAL ELEPHANTIASIS.

Dr. Ralph Pemberton, by invitation, exhibited the patient.

Dr. Jopson said that he had exhibited this child and the other mentioned by Dr. Pemberton to the Society six or seven years ago, at one of its first meetings, and had then lost sight of them until within the last week or two. When he exhibited them, he was in doubt as to the exact nature of their disease, but Dr. Stengel suggested that it might be lymphatic in origin. After having studied the cases further and having investigated the literature of the subject, the speaker had come to the conclusion that they are true congenital elephantiasis. According to E. Marchand and Halenkampf, these cases are of two types:—those due to hypertrophy and overgrowth of the lymphatics; and those due to hypertrophy and overgrowth of the blood-vessels, of fibrous tissue, or of nervous tissue.

The reason that Dr. Jopson considered these cases to be lymphatic is that there is an absence of any signs of vascular telangiectasis of the skin, of fibromata locally, or elsewhere, and of dilatations along the superficial nerves; and because of the appearance and nature of the swellings. Some cases have been reported in which the disease occurred in several generations of the same family—six generations, in the family studied by Milroy. The hereditary nature of this disease has been pointed out by many authors; indeed, the persistence with which the deformity crops out strongly reminds one of hemophilia.

The changes that have taken place in this boy since he was exhibited by Dr. Jopson are a diminution in the size of the right leg and an increase in that of the left. There must have been an infective process going on, because pustules were present, the remains of which can now be seen. There is a subacute lymphangitis in the limb, which is hot and slightly reddened; and the changes are similar to those described as occurring in cases of true tropical elephantiasis—endemic elephantiasis—due to filarial infection. He does not think that there is any question of filarial infection in this case, however, because this is a disease that runs through several generations, and has probably never been seen in tropical countries. Most cases of it have occurred in Europe. It is due to congenital malformation of some of the soft tissues. Cases are very rare in this country.

In answer to a question about the further history of the other boy, Dr. Jopson replied that the swelling is now less marked than it was six years ago. It has never extended above the ankles in the case of the younger brother. The child at first had to wear special shoes, but this is no longer necessary. He never has attacks of inflammation, and seems to be in a fair way to get into a condition resembling that of his father.

In answer to a question by Dr. Ludholz, as to the effect of posture on the edema, Dr. Pemberton replied that elevation causes no marked change. He also said that a blood-examination had been made, but not for filaria. No abnormality in the number of red cells was found.

ARRESTED CEREBELLAR DEVELOPMENT.

Dr. J. H. McKee presented the patient, a boy four years old, who had a remarkably good family history. The mother had never had a difficult labor, nor had instruments been employed when the boy was born. He did not have asphyxia neonatorum. His first year was uneventful, barring some unaccounted for "blue spells" when three weeks and when seven months old. He had never had any infectious disease. Indeed, his mother had noted nothing unusual about the child until he reached the age when he should have talked and walked. He has never walked, and he did not talk until last summer. During the past summer he had six convulsions, two at a time; and following the first, internal strabismus appeared. The most conspicuous nervous feature of his case is the marked ataxia that is exhibited in nearly every act he endeavors to perform. When he is assisted to walk, he throws his legs out like a patient with locomotor ataxia and exhibits a strong tendency to fall backward. Dr. Spiller regards his case as one of arrested cerebellar development. Dr. Posey made a careful study of the child's eyes, found him highly hypermetropic and referred him to Dr. Langdon for refraction. He has apparently improved under tonic treatment and exercises intended to improve his coordination.

Dr. Wharton Sinkler said that the chief interest of the case depends upon the differential diagnosis between cerebellar degeneration, or arrest of development; and Friedreich's ataxia. In cases of cerebral arrest of development, there is almost always a history of traumatism at birth, or of conditions that have led to hemorrhage; but in this case there has evidently been either an arrest of development, or a degeneration in the cerebellum or in the cerebellar tracts, that is not dependent upon birth-injuries, giving rise to incoordination of movements and inability to walk. The speaker considers it an open question whether the case is one of arrest of development or of degeneration of the cerebellum. The fact of the child's having been so tardy in general cerebral development—its slowness in learning to speak—indicates an intracranial disorder, rather than a cord lesion; therefore, Dr. Sinkler also thinks that the trouble must be regarded as cerebellar rather than of the cord. It resembles the cases of cerebellar ataxia that have been described. The condition is a rare one, and the experience in the past has not been wide enough to throw any light upon the pathology of the disease.

Dr. J. Madison Taylor said, in support of Dr. Sinkler's view, that the case seems more like cerebellar than like cord trouble; that in the cases of Friedreich's ataxia he had seen, the general condition had suffered more and tremors had often been present; and that they had often shown more nutritional disturbances than this child exhibits.

Dr. McKee said that upon first seeing the case he had been struck with the history of cyanotic spells in early life. There was no history of congenital cardiac disease, nor could anything be found suggesting this. There was no history pointing to infection of the new-born. Cyanosis is quite frequently observed shortly after birth in infants that have suffered cerebral hemorrhage; and Dr. McKee at first thought that there had been a cerebral hemorrhage in the unmapped region of the cortex. Friedreich's ataxia was at that time excluded, on account of the sharp reflex that the speaker thought he had secured; but Dr. Spiller later tested the reflex with the percussion-hammer, and secured it only twice out of a number of attempts. Dr. Spiller said, therefore, that he could not positively exclude Friedreich's ataxia, though he believed the lesion to be cerebellar.

Dr. Hamill referred to an autopsy upon a new-born infant, made by him, in which marked bony deformities and an extremely small cerebellum had been found. The cerebellar fossa was just about one-quarter of the normal size. Dr. Hamill thought it interesting, in connection with the case just exhibited, to speculate upon the course that his case would have pursued had the child lived beyond the age of infancy.

FOREIGN BODY IN RECTUM.

Dr. Hamill showed a heavy wire staple measuring $^5/_{16}$ of an inch in width and 2¼ inches in length and having very sharp points. The staple had been swallowed, rounded end first, by a three-year-old child. No treatment was inaugurated and no symptoms were manifested until the tenth day, when the child had twinges of pain in the rectum and passed small particles of blood. Digital examination made at this time showed the points of the staple impinging against the sphincter ani.

It was successfully delivered by the mother, who was instructed to introduce her finger into the rectum when the child expressed a desire to defecate, to place it against the points of the staple and to guide the points as they were pushed downward in the act of defecation.

The specimen had been sent to Dr. Hamill by Dr. Eiseline, of Shortsville, N. Y.

Dr. Myer Solis-Cohen said that while a resident in the Children's Ward of the Philadelphia Hospital he had been handed by a nurse an open safety-pin that had been passed by a child, who had previously evinced no discomfort. He said that it is not uncommon for persons that have swallowed small articles to pass them without any trouble. It is said that the pick-pockets of London swallow stolen jewels and then eat potatoes or soft bread, after which these articles are passed by them without difficulty. Not long ago a man swallowed a dental instrument. He was examined by a laryngologist, who discovered the instrument in the man's esophagus. A diet of potatoes and bread was prescribed, and the instrument was passed in the course of a day.

OPERATION ON A CASE OF TYPHOID PERFORATION IN A CHILD OF SIX YEARS.

Dr. John H. Jopson reported the case. The perforation had taken place at the beginning of the third week of the disease; and the patient had not been admitted to the hospital until general peritonitis had developed, twenty-four or forty-eight hours after perforation had occurred. The perforation was located eight inches from the ileocecal valve in the ileum. It was small and round, and the neighboring gut-wall was healthy. The perforation was easily sutured, and the abdominal cavity was irrigated and drained. The patient lived seventy-two hours after the operation, dying of general peritonitis. After death, the perforation was found to be tightly occluded. The general condition before and for twelve hours after the operation was very fair, considering the lesions found. This emphasizes Elsberg's conclusion that in children shock is not usually marked after perforation. For this author found the prognosis to be twice as good in children as in adults; and perforation to be nearly as common, in proportion to the number of cases, between the ages of six and fifteen years. Elsberg's case, the youngest operative case Dr. Jopson had found reported, was six and a half years old. This patient's age was six years.

Dr. Griffith was inclined to think that Elsberg's statistics are nearer correct than are some of the previous ones met with in text-books. In some of the latter, many of the cases reported must be excluded; because one cannot be sure that they were undoubted cases of perforation, since they recovered without operation. After having watched current literature to a considerable extent, the speaker had been brought to the conviction that his own experience in having seen quite a number of cases is not so very unusual. He could recall 5 cases of perforation in typhoid fever occurring in children coming under his own observation, all confirmed by autopsy. He has found the diagnosis of this condition in children to be extremely difficult—much more so than in adults. The classical symptoms of perforation are not so often present in early life. In only 1 of the 5 cases in children was he able to make a diagnosis sufficiently early and sufficiently positive to warrant his taking such a serious step as to open the abdomen of a child already seriously ill with typhoid fever. The details of the cases he intends to publish at some future time.

Dr. McKee said that Dr. Hamill and himself had had an unusual experience, having had 2 cases of perforation during typhoid fever in childhood within about six weeks. The first occurred in Dr. Hamill's service. Dr. McKee was much interested in this case, because he had sent the patient to Dr. Hamill. The other patient, a little girl, was sent to Dr. John B. Roberts as a case of appendicitis. She had been ill for two weeks, suffering with severe abdominal pain and with vomiting throughout that time. She had been placed upon the operating table, when some suspicious spots on the abdomen were noticed and the operation was deferred. He was asked to see the child, a colored girl about six and a half years of age. The facial expression was that of a very ill child. The tongue was heavily coated. There was a rather well-marked catarrhal pneumonia at both bases, but principally at the right. The abdomen was tense, and so tender that a satisfactory examination could not be made. The resistance offered by the right rectus, however, was much greater than that offered by the left. Dr. McKee regarded the case as one of appendicitis, and advised operation; but the leukocyte count and the Widal and diazo reaction enabled him to make a correct diagnosis subsequently. He thinks that, paradoxical though the statement seems, had the proper diagnosis not been made the child's life might have been saved. There were slightly more than 4,000 leukocytes and positive Widal and diazo reactions were obtained. The temperature that afternoon was over 104°F. The following morning it fell to 101°F., and there was a commensurate improvement in the pulse, which was stronger and slower, and in the respirations. The pain also disappeared. The patient had no exascerbation of the abdominal symptoms. The same day, on account of the laboratory results and of the great improvement in the child's condition, it was decided to defer operation. Dr. McKee did not see her the day after this, but the resident informed him that she had remained comfortable. Early the following morning the night nurse found that the patient was decidedly weak; and she died soon afterward. An autopsy was made, and it was found that there had been a perforation and septic peritonitis. The abdomen was filled with recent lymph and some pus. Catarrhal pneumonia was also found. Dr. Hamill was present at the autopsy, as he was much interested in the case.

Dr. Hamill said that, as there was neither an operation nor an autopsy in the first case described by Dr. McKee, it could not go on record as one of perforation in typhoid fever. He was unable to induce the surgeon, whom he called in consultation, to operate, and the parents would not permit an autopsy to be made. The patient, unlike those referred to by Dr. Griffith, had the classical signs of perforation. There was sudden pain, collapse, a fall in temperature; later the abdomen became distended, the child had an expression of anguish and all the symptoms of peritonitis developed rapidly; the temperature became elevated and the patient died within forty-eight hours of the onset of these symptoms.

DR. MILLER said that the case reported by Dr. Jopson emphasizes the importance of making the diagnosis early, if one is to save the life of the patient. When he saw this patient, a little after midnight, he had the signs of a general perforative peritonitis; and no hope could be entertained of saving his life, even if he were to be operated upon. The perforation must have occurred from twenty-four to forty-eight hours previously. In order to be certain of the diagnosis in such instances, some cases must be operated upon unnecessarily; for early diagnosis is extremely difficult, although anyone can diagnose a case of general septic peritonitis. To save the patients, however, the operation must be performed before this has taken place. Dr. Miller said that he bases his opinion that the diagnosis of this condition must be extremely difficult upon his experience with adults; for he has seen very few cases of perforation in children. The two most important symptoms met with by him are pain and rigidity, but he thinks that these would be difficult to appreciate in young children. The younger the child, the more difficult would be the diagnosis. Older children are more likely to express their feeling, so that in them these symptoms can be appreciated as readily as in adults. The other symptoms mentioned in text-books are often wanting, unless there is general peritonitis, in which case it is too late. Collapse does not occur until there is general peritonitis, and fall in temperature is as often absent as present. The leukocyte-count, also, is very unreliable.

In the case referred to by Dr. McKee, Dr. Miller thinks that a perforation occurred at the time the symptoms were first noticed. He bases this opinion upon his observation of a case in which the symptoms of perforation had subsided; but in which subsequently there was another attack, from which the patient died. He believes that in Dr. McKee's case perforation occurred, and that something—probably adhesion—prevented extravasation and consequent general peritonitis. This is why the child improved. Then the adhesion broke, peritonitis occurred, and the child collapsed and died.

Dr. McKee said that he should like to ask Dr. Miller whether he had ever seen amelioration of the symptoms in this way, with a fall in temperature. Dr. McKee has talked with a number of surgeons, who all consider the case unique in that respect. The morning following the initial examination he was able to palpate the border of the liver and the enlarged spleen, while the abdomen was not unduly distended.

Dr. Miller replied that in the case to which he had referred, in which there was a double perforation, the same thing had occurred. There was every sign of perforation, but the surgeon would not operate. The child subsequently improved and seemed to be getting well. Two weeks later, however, it had another attack and died. Two perforations were found quite near together, one being sealed with a tag of omentum.

Dr. L. H. Bernd said that during the past winter he had operated upon a child that had a history of having been ill with typhoid fever for two weeks. The abdomen was distended, and the child was screaming with pain in the right iliac region; but the rigidity was on the left side. A probable diagnosis was made from the history of the case; and as the child was in such a desperate condition, it was decided not to wait. The abdomen was opened in the median line; and the case was found to be one of appendicitis, with the appendix pointing toward the left side. The boy had had no pain on the right side on deep pressure. The abdomen was much swollen and the case had been sent into the hospital as one of perforation from typhoid fever. The boy made a complete recovery.

Dr. Jopson, referring to the 5 cases seen by Dr. Griffith, said that he considered this a large number to have been seen by one man. As to the absence of collapse, Elsberg says that the symptoms in children do not differ markedly from those seen in adult life; but that collapse is not present typically in children, except when there is advanced peritonitis. This has been Dr. Griffith's experience, and was also the case in the patient under consideration; except that this child may have gone into collapse twenty-four or forty-eight hours previously. Its condition when operated upon was not at all bad, and its pulse was quite fair. After the operation it reacted rapidly, the pulse regaining much of its force. Collapse, therefore, is not a striking symptom in childhood.

THE NEW YORK ACADEMY OF MEDICINE.—SECTION ON ORTHOPEDIC SURGERY.

T. Halsted Myers, M.D., Chairman.

Meeting of November 20, 1903.

Dr. R. Whitman presented 2 cases illustrating the

TREATMENT OF DISLOCATION OF THE HUMERUS COMPLICATING OBSTETRICAL PARALYSIS.

The method which he had employed was similar to that of the Lorenz reduction at the hip joint. This was preliminary forcible manipulation to stretch the contracted parts and reduction by over-extension of the elevated arm, which was then slowly forced downward to the side of the body and fixed by means of a plaster bandage. This was retained for several weeks or months and on its removal manipulation and muscle training were, if possible, begun. In some instances it might not be possible to reduce the displacement at the first attempt. Cases of this character were sometimes classed as true congenital displacement or misplacement of the humerus, but they were in most instances secondary subluxations induced by the habitual attitude of adduction and pronation characteristic of obstetrical paralysis. In certain cases repair of the injury to the nerve trunks had taken place and yet the function was disabled because of the subluxation of the head of the humerus backward, which made supination of the forearm impossible. In such instances the correction of deformity might accomplish a practical cure. In the majority of cases of this character the paralysis was irremediable, yet even in this class the reduction of the displacement improved the attitude and function of the arm.

The first case was that of a girl eight years of age, operated upon three months before. The reduction was successful, the attitude was normal, there was a fair range of motion in the joint and apparently no paralysis of the muscles. In this case functional cure was probable.

The second case was that of a boy eleven years of age. The extent of the original injury to the nerves was indicated by the atrophy and loss of growth of the extremity. In this case reduction was difficult, requiring several sittings. Now, about one year after the operation, the head of the humerus appeared to be firmly fixed in its proper position. Although there was but little power of voluntary motion in the joint, the appearance and the function of the limb had been considerably improved by the reduction of the displacement.

Dr. Whitman presented, also, a case illustrating the operative treatment of coxa vara. The patient was a girl ten years of age who had limped for two years and had recently complained of much pain and discomfort. The treatment consisted in the removal of a sufficient wedge of bone from the base of the trochanter to permit the restoration of the normal angle of the femoral neck. A thin layer of bone at the extremity of the wedge formed a hinge, the two opposing surfaces being brought into contact by abducting the limb. In this maneuvre, the trochanter being fixed by contact with the upper border of the acetabulum, further abduction of the shaft closed the wedge-shaped opening. In this attitude the limb was fixed by means of a plaster bandage until repair was complete. In the patient presented but slight trace of the former disability was evident, although the operation had been performed in September, the bandage having been removed about three weeks before this meeting.

DISCUSSION OF DR. WHITMAN'S SECOND CASE OF CONGENITAL DISLOCATION OF THE HUMERUS.

Dr. V. P. Gibney said that he remembered seeing the operation. He thought at the time that the stretching had not been done sufficiently well to get the arm far enough back to make the reposition and reduction of the arm where it belonged absolutely sure. The boy had been kept at the hospital for a long time. After the removal of the plaster it seemed to the speaker he had had a little better range of motion than at present. He said all were familiar with the cases presented by the late Dr. Phelps. The open method had been adopted, but he could not quite see how a perfect result could be obtained until the parts could be held in better position and for a longer time than by the present treatment. Dr. Gibney thought Dr. Whitman was working in the right direction, and that by and by a perfect method of treatment for this deformity would be evolved.

Dr. Whitman said that this case was complicated with paralysis and could not be discussed as a simple dislocation.

Dr. Gibney said such cases were called obstetrical paralyses. Later on, other parts were involved. In the case under discussion the head of the bone could be distinctly felt back of the shoulder joint. It was simply a question of terms; many called the condition congenital dislocation. Whether the paralysis caused the dislocation, he did not know. He was as yet unconvinced that it is a true paralysis.

Dr. H. L. Taylor said he judged that these affections were secondary to obstetrical palsy, and should be reduced by a system analogous to that employed in congenital hip dislocation. In this case the shoulder seemed to be in good position. There was subluxation of the end of the clavicle, which was not important, though quite prominent. There is limited use, but as Dr. Whitman had said, it must be remembered that the arms were more or less palsied, and the getting of the head of the humerus into its socket and keeping it there was certainly an improvement in the child's condition, and an improvement over the cutting operation for getting the arm in position.

Dr. Ladinski said that he had been very much interested in the case several years ago when he had seen a number of these children. The condition was then ascribed to injury to the brachial plexus, fifth and sixth roots, paralysis terminating in luxation of the shoulder joint. If the muscles did not undergo regeneration under treatment, or spontaneously, there was permanent disability. The speaker was glad to see such good results obtained by manipulation without any other operative interference.

Dr. L. Pierce Clark said that he was very sorry that he could not know more definitely about the cause of this condition, particularly in regard to birth. He thought that these conditions figured as obstetrical palsy, due to lesion, by stretching the fifth and sixth cervical roots, although there often was injury to other roots. He had palpated the plexus in both cases. He could detect the site of lesion in both. He thought the range of paralysis in the boy was greater in the brachial plexus. He thought other roots could be found damaged far down in the plexus behind the clavicle. In obstetrical palsies the deltoid suffered most because it was most completely supplied by the fifth and sixth cervical roots; then the biceps and supinator brevis. Subluxation of the shoulder was secondary to the paralysis; the atrophy in the deltoid corresponding to the atrophy in the shoulder joint. It is a painful condition, and while operation may enable the muscle to work at much better leverage, nerve section and suture must be done. Kennedy had done the most successful operations of this character recently.

The speaker had, during the past year, looked up a series of cases on which Dr. Alfred S. Taylor had been doing nerve section and suture. The cases had been doing all that could be expected, but much time was required for reparative processes, and they were not ready for presentation, but would be in four or five months. In such operative work as that presented by Dr. Whitman, this operation would not influence the pronation of the hand, because that was done by the supinator brevis. This attitude of marked internal rotation was present, not because the pronators were weak, but because the external rotators had been paralyzed. As the condition gradually improved, the elbow came down to the side and contractions took place. Last in the process was pronation of the hand. He had never seen cases of obstetrical paralysis in which this lesion had been marked, in which there had been entire recovery of supination of the hand under any form of treatment. Massage and passive movements were disregarded by neurologists, as the patients never did the movements of their own volition. After operation, a series of educational principles had to be carried out, and afterwards cerebral training was given. Representations of movements must take their position in the brain. The brain, and not the muscles, must be educated. The speaker thought Kennedy's brachial plexus operations more successful than others, because he applied the cerebral education principle.

THE CHAIRMAN, DR. MYERS, wished to know in how severe cases of these paralyses, Dr. Whitman applied reduction. Was it not possible, in some cases, to produce immobilization in this way at the shoulder joint, and so secure more motion of the arm through the less paralyzed muscles acting on the scapula?

DR. WHITMAN said he had studied the hospital reports carefully in thirty or more cases of obstetrical palsy, and had seen the patients come in, all having the well-known attitude belonging to this condition. There was at first no subluxation present at all; it was the effect of the continued pronation and adduction. For that reason, Dr. Whitman thought passive motions of great importance in order to prevent such conditions as he had shown. Whether there was paralysis or not he thought it better to have the head of the bone in the normal position. Then there was power to supinate the arm.

In the case of the little girl, Dr. Whitman thought there would be recovery of function, because the injury to the brachial plexus had been slight, but in the other case there would never be recovery, as the injury had been great, as shown by the atrophy of the muscles. There was complete ankylosis of the shoulder joint. It was better with complete ankylosis to have the head of the bone in its proper place, which was all he had attempted to show. In former times this bad attitude had been allowed to persist, now it was remedied.

It was better to do this forcible operation in one, two or three sittings, thoroughly stretching the parts, than to make a section posteriorly without stretching. Whether or not the bone could be successfully replaced, and whether it would stay in place, he did not know. He did not present these as favorable cases. Thus far the bone had remained in position, and function was very decidedly improved.

Dr. Gibney asked Dr. Whitman whether he did not think it would be better to do an excision of the head of the bone in the boy's case, in view of the importance of having it in its proper place, thus giving the patient a more flexible joint.

Dr. Whitman replied that it seemed to him that the atrophy of the scapula and shoulder muscles was very great. The arm was considerably shorter than the other side. He thought excision would be of little use if there were not sufficient muscle to move the arm about. It was a difficult case at the time of operation, and he was obliged to attempt to replace the bone in two sittings. Had been perfectly contented to have complete ankylosis because the attitude was much better. The boy now had partial supination; he had none before. The boy had had no treatment after the operation, whatever, except what the mother had been able to give him, in the way of massage, etc. He thought in the reduction of all deformity of long-standing, the operator should not attempt to do what was required in less than two or three sittings.

Dr. Taylor said he understood the presenter of the case to say the legs had been made equal in length. He was quite sure that the affected limb was half an inch shorter than the other, though it was in excellent position.

Dr. V. P. Gibney said that he wished to report the case of a boy ten years of age, with

MARKED FLEXION DEFORMITY AND SUBLUXATION OF THE HEAD OF THE TIBIA

presenting a long cicatrix below the patella. He thought it, on first sight, a case of exsection of the joint in early life, and the usual recurrence of deformity that takes place in those cases. He wished it, however, placed on record as malarial synovitis of the knee, or rather,

SYNOVITIS OCCURRING DURING MALARIAL ATTACKS,

and wanted to bring up the question as to whether it was osteitis or pure malarial synovitis. Dr. Whitman had operated on the boy last Tuesday, doing osteotomy above the condyles. The leg was now quite straight. Dr. Gibney showed a radiograph of the limb and wished to call attention to the curving of the lower end of the femur, which takes place in tuberculous lesions of the bone, and have it compared with the sound limb.

The history of the case, in brief, was as follows:—Boy, eight years of age. Entered Bellevue, November 22, 1900. Family history negative save for malaria which attacked all the members of the family just before the boy's admission to the hospital. Plasmodium had been found in the blood. At the end of November, 1900, the boy began to have chills followed by fever and sweating. This occurred every other day. He would have twenty chills, accompanied by nausea, vomiting and diarrhea. Always severe frontal headache. No epistaxis. Looked well nourished but slightly anemic. Heart normal, slightly irregular. Temperature 102.2° to 105° F.

On December 7th was in good condition and was discharged.

On December 9th, was re-admitted to hospital, suffering from relapse. Arsenic was given.

December 11th, Warburg's tincture was given. Temperature dropped. Tenderness in right knee and elbow. These joints swollen and stiff. Soda bicarbonate and salicin given.

December 14th, very painful. Salicin continued.

December 26th, condition unchanged. Tenderness most marked at inner aspect of tibia. Inguinal glands swollen. Stools numerous; indications of colitis.

January 1, 1901, joint less tender, stools less numerous. No blood, no mucus.

January 8th, joint still painful. Marked contraction of the leg. Massage and passive motion given daily. Stools fewer, and more normal in character.

January 11th, complained of pain in joint.

January 18th, transferred to surgical division.

January 20th, joint opened, and cartilage found diseased. Scraped away completely, bones found intact. The quadriceps extensor was cut out to get the patella out of the way. Suture by chromicized gut. Skin suture with silk. Plaster of Paris applied from hip to toes.

January 31st, patient in good condition.

Specimen found to be the seat of chronic inflammation. No tuberculosis.

March 4th, removed plaster.

March 5th, temperature 104° F. Plasmodium found.

March 7th, malarial chill 11 A.M., followed by fever 104.8° F. Sweat. Re-applied plaster.

March 25th, removed plaster, applied splint. Slight flexion in knee joint.

April 5th, goes about ward pretty well. Runs with slight limp.

May 19th, discharged.

Admitted to Hospital for Ruptured and Crippled, November 5, 1903, with deformity described by Dr. Gibney, and shown by radiograph.

Dr. Gibney also described a case of

ADULT KNOCK-KNEE.

The patient was a large Swedish woman, thirty-two years of age. The knock-knee was very marked. Very little history could be obtained. On the inner side of the knee what seemed to be a very hard mass appeared, not distinctly outlined. It was suggestive of osteosarcoma, but the diagnosis was not positive and an X-ray was taken. This showed a much elongated internal condyle, and cuneiform osteotomy was done and the limb was brought around in perfect position without difficulty.

Dr. Whitman said that he thought the bending of the lower extremity at the knee not uncommon in flexion deformity so often seen.

Dr. Taylor related the case of an Italian with obliquity of the pelvis. The man complained of backache, and on examination marked pelvic obliquity was found. Short legs were not uncommon but the trouble with this man was that one leg was longer than the other, which was normal. The condition was due to an old osteitis of the tibia. One leg was one-half inch longer than the other.

Dr. Napier said that unfortunately the patient of whom he would speak was beyond presentation. The case was one he presented at the April meeting of the Section. A boy of fourteen, who had lateral curvature with some rotation, beginning Pott's paraplegia. After the above meeting, the boy was ordered to bed. At that time the paralysis had somewhat increased. On Tuesday, April 21st, a plaster jacket was applied in suspension. The paralysis had then extended along the legs, and was almost complete. There was nearly complete loss of sensation, loss of bladder control and no movement of the bowels. Temperature normal. The boy was kept in bed.

On April 22d in the morning, nearly complete paralysis, loss of all power in the arms, very little sensation. In voluntary evacuations, temperature normal. During the afternoon, the breathing became difficult. At five o'clock on the 22d, he died of paralysis, apparently, of respiration. Dr. Napier reached the house a short time after the boy died. He presumed this case was one of ascending myelitis. He wondered whether the contents of the abscess might not have entered the spinal cord, causing the rapid paralysis.

Dr. Witmer presented a case of

IMPAIRMENT OF GROWTH DUE TO CEREBRAL LESION.

Young woman, seventeen years of age, paralyzed since birth. No instruments were used, but the birth was tedious. Injured arm three inches shorter and forearm one and three-fourth inches less in greatest girth than the other. Face and chest on injured side much smaller than the other side. Possibly a marked case of socalled birth palsy. If so, involvement came from fifth and sixth cervical because the entire arm was affected, the extensors more so than the flexors. Electrical reactions normal. Sensation normal. The speaker thought because of extreme failure of growth and the fact that reactions to electricity were normal, the paralysis was of the cerebellar or spastic type, rather than of the spinal type. Legs normal. He agreed with Dr. Clark that it was the education of the muscles that was of benefit in these cases.

In the discussion Dr. Whitman said that in this case there was partial subluxation of the humerus. The patient had power in muscles and with the head of the bone in its normal position, she would have the power of supination. In ordinary cases of obstetrical paralysis there was marked atrophy of all of the upper muscles, it was not limited to injury of the cords of the brachial plexus, and patients often were left with little power in the arm. He thought subluxation required treatment.

Dr. Clark spoke as follows:—"Some three weeks ago I saw Dr. Witmer's case to decide upon the feasibility of operation. I noticed the marked facial asymmetry. Since then I have re-examined several other cases of Erb's palsy to see if the non-development of the face was uniformly present on the side of the arm lesion. I have found it present in all where the patient is sufficiently old to give us an asymmetry which might come from asymmetric growth. I explain this new condition in Erb's palsy upon the disuse theory:—The patient in failing to use the paralyzed arm and shoulder fails, also, to give the normal impulse to growth in facial muscles and bone. The side of the face on the side of the lesion remains behind in normal growth. In comparing the asymmetry of the two sides in unilateral palsy lesions, such as Erb's palsy, we employ a hypertrophied standard on the sound side, just as in anterior poliomyelitis and infantile cerebral hemiplegia, owing to the excess development of the sound side through extraordinary labor thrown upon that side. The close association of the cerebral areas of muscular movements for the face, arm and hand, in the motor region of the brain, accounts for the face not developing when the arm remains paralyzed from birth; it is essentially a lack of associated voluntary muscular efforts. If, on the contrary, these efforts should be prolonged over a considerable period of time, the face might not only show no non-development, but it might appear normal or even hypertrophied, as the partial palsy would serve to call out more persistent forced voluntary effort, thus calling into play the accessory associated movements in adjacent brain areas functionally allied, such as those for the face, when the arm is being used.

"During the past year Dr. Alfred S. Taylor has performed for me a series of nerve section and suture operations upon brachial plexus lesions of socalled Duchenne-Erb or birth-palsy type. We shall report the results later together with our observations upon the cause, pathology and treatment of the conditions.

"I can see no good or necessary reason to invoke two nerve lesions to account for these cases. The characteristic symptoms of Erb's palsy together with palpation of the site of the lesion at Erb's point ought to make certain the diagnosis of birth palsy. Certainly I should not diagnosticate a cerebral lesion here, neither capsular nor surface hemorrhage, where there are no convulsions, no facial immobility, no spasm or spasticity of muscles, no incoordination nor spontaneous uncontrolled movements, and where the weakness is most pronounced in the deltoid and biceps and not distally as in cerebral palsy, also where there has been no marked increase in the reflex of the facial muscles nor in any of the paralyzed parts. Finally, we must bear in mind that the labor difficulty causing the two affections is different:—In birth palsy as in this case we have imperfect rotation of the trunk; the head is in extreme rotation, the shoulder is caught under the symphysis and the tension and stretching of the fifth and sixth cervical spinal roots results in an attempt to force the delivery by pulling on the head. In cerebral birth palsies the difficulty arises in the delivery of the head; it is compressed and the labor is markedly prolonged and much asphyxia results."

Dr. Witmer said the site of violence to the head might be remote from the location of the cerebral injury. He thought it was not unusual to find hemorrhage of the spinal cord in those cases of birth palsy.

A Means of Administering Quinin to Children.—The well-known difficulties of giving quinin to children in pill or powder form have usually made it necessary to mix it with coffee, milk or syrup. The little patients, however, usually vomit the remedy given in this manner. On the other side of the question, it is not easy to replace the sulphate of quinin by the less soluble salts, which, although they may be tasteless, are difficult to take, because they fill up the mouth. Borde (*La Sem. Méd.*, March 4, 1903) prescribes the sulphate of quinin to children of any age, as follows: He mixes in a mortar one gram of sulphate of quinin with eight grams of olive oil. Twenty drops of this mixture contains 0.05 grams of quinin. In turning these drops into a teaspoon, filled with cold, fresh milk, preferably much sweetened, they will form in the midst of the milk, and on its surface, a little island. Each little particle of quinin having been enveloped by the oil, slips easily over the mucous membrane of the mouth of the child, who does not seem to suffer the least possible repugnance.—*New York Medical Journal.*

Current Literature.

PATHOLOGY.

Jemma, R.: A New Method of Finding the Tubercle Bacillus in Cephalorrachidian Fluid. (*Riv. di Clin. Pediatr.*, June, 1903.)

The author recommends the socalled "mammary method" for the determination of the presence of tubercle bacilli in cerebrospinal liquid obtained for diagnostic purposes by lumbar puncture. Ordinarily the usual method of inoculation is very tedious and not always trustworthy. The new method was introduced into experimental pathology by Nattan-Larrier and Griffon. It consists in injecting the suspected liquid into the mammary gland of a guinea-pig during her period of lactation. If tubercle bacilli are present in the fluid, the animal will have a culture of these bacilli in the mammary gland and the milk examined daily will, after a short time, show these germs in large numbers. They may be stained in the usual manner and replanted on other culture media. The author examined 3 cases of tuberculosis by injecting the cerebrospinal fluid into the mammary glands of guinea-pigs. He concludes that this method is very valuable as a means of diagnosis in suspected tuberculous meningitis. If we inject the fluid into the peritoneum we must wait about four weeks for the animal to die, in order to establish the diagnosis of tuberculosis. The inoculations with the new method must be made within two or three days after the guinea-pigs had born offspring, for after fifteen days the secretion gradually disappears.

Luisada, Ezio: The Nerve Cell in Meningitis. (*Riv. di Clin. Pediatr.*, July, 1903.)

A study of a number of cases of meningitis of various types has verified the assertion of some authors, *e.g.*, Thomas, to the effect that the nerve cell is always diseased in the various forms of meningeal inflammation. This is what leads to death in the forms which are transitions between meningitis and meningism, pure and simple. The nature of the lesions in the nerve cells in meningitis varies with the quality of the morbid agent and the intensity and duration of its action, as well as with the individual resistance of the cell. This resistance does not seem to depend upon the seat of the nerve cells as regards the site of the meningeal exudate, but interstitial changes, which may alter the nutritive condition of the nerve cells, must be taken into account. Probably certain nerve cells, especially those in the bulbar centres, are less resistant than others which are not affected even by the most severe inflammations.

In meningitis, while the compression of the axis cylinders of the neurons is responsible for some of the symptoms, it is not the principal cause of the clinical picture of the disease. We can have a complete clinical picture of meningitis, without any macroscopic meningeal exudate. The toxic or toxico-bacterial element plays the principal rôle in the pathology of the infectious diseases of the meninges and the nerve centres. There is no anatomico-pathologic distinction between meningitis and meningism, and the latter should be almost always regarded as the initial stage of an inflammation of the meninges and nerve-centres.

Berghinz, Guido: Anatomical Lesions in Little's Disease. (*Riv. di Clin. Pediatr.*, June, 1903.)

A case of Little's disease examined histologically, according to the methods pursued by Mya and Levi in 1896, showed the complete absence of the lesions described by these authors. There were absolutely no local lesions in any part of the cerebrospinal axis, and the structure of the entire spinal cord was normal, histologically speaking.

Pacchioni, Dante: A Case of Purulent Polyarthritis Due to the Intracellular Diplococcus of Weichselbaum. (*Riv. di Clin. Pediatr.*, July, 1903.)

A child, aged two and a half years, was seized with an attack of measles followed by bronchopneumonia, and pleurisy. The capsulated and lanceolate diplococcus was found in the pleural exudate. After the thoracic lesions had almost disappeared the knees became swollen, red and painful. Two days later the ankles followed suit. A case of smallpox having developed in the ward, the child was vaccinated and in due time showed a generalized eruption, with the appearances of varioloid. At the same time the child had a purulent vaginitis, and in the exudate the same large diplococcus was found, but no gonococci. She recovered from the varioloid, had no fever, but her joints remained swollen, the left shoulder joint also taking part. These swellings went down within sixteen days, except in the left knee, where the swelling was present for over thirty days. Salicylates, applications of methylsalicylate, massage, and evacuations by means of the aspirating-needle were used. In the pus taken from the joints the diplococcus of Weichselbaum was found. The germ was not the gonococcus, as was shown by all the bacteriological tests. Such cases are very rare and all the cases of this kind hitherto reported have followed cerebrospinal meningitis, so this is the only case on record in which the joints were infected by the diplococcus of Weichselbaum without a cerebrospinal affection.

Mya, Giuseppe: A Case of Cerebrospinal Meningitis Due to the Bacillus of Pfeiffer. (*Riv. di Clin. Pediatr.*, July, 1903.)

This case was seen in a child, one year of age, and makes the fourth case of its kind seen by the author within a year. The other 3 cases have been previously reported (*Vide.* Caccia, *Riv. di Clin. Pediatr.*, No. 2, 1903). It proves, according to the author's view, that the bacillus of Pfeiffer is an important cause of cerebrospinal meningitis, little less so than the meningococcus of Weichselbaum, and the pneumococcus of Fränkel. The child had an extensive cephalhematoma, and an attack of bronchopneumonia following influenza, after which he developed a typical cerebrospinal meningitis.

Longo, Antonino: The Morphology of Löffler's Bacillus in Reference to the Prognosis of the Various Types of Diphtheria. (*Riv. di. Clin. Pediatr.*, July, 1903.)

In 1892 Martin published the result of an examination of 200 children with diphtheria, and stated that there was a relation between the size of the germ and the gravity of the infection. Thus, if the germ was long, the infection was grave. If the germ was moderate in size, the infection was moderate, and if the germ was small, the infection assumed a mild form. Concetti afterward denied the correctness of this statement. The present author supports Concetti's view, and says that there is no relation between the size of the bacillus of diphtheria found in a child's throat and the gravity of the case of diphtheria. He reports a case of chronic laryngeal diphtheria in which the bacilli were large and branded, just like those described by Martin in grave cases of acute diphtheria. Concetti proved that by changing the culture medium or the conditions of growth these large bacilli, which were innocuous to animals, could be turned into virulent diphtheria germs. There is, therefore, a danger in the mild clinical cases running a slow course that the bacilli will change into a virulent type, and so the use of antitoxin is indicated.

Giarre and Picchi: Bacteriology of Some Complications of Measles. (*Arch. di Patolog. e Clin. infant.*, Vol. ii., No. 2, 1903, p. 54.)

The authors have isolated a hemophile bacillus from the conjunctival secretion of children with measles. They also looked for this germ in twenty cadavers of children that had died of complications of measles, as well as in the dead bodies of four children that had died of other diseases. In almost all cases they found this germ in cultures on agar-blood or agar without peptone, made with the bronchial mucus, the pulmonary tissues, the blood from the heart, the pleuritic fluid, etc. Giarre thinks that this bacillus should be regarded as a variety of Pfeiffer's bacillus of influenza, a variety which is specific for measles, and that it might exist as a saprophyte in the respiratory tract, inasmuch as it has been found in the secretions of the bronchi and in the blood of persons suffering from whooping-cough, scarlet fever, chickenpox, diphtheria and pulmonary tuberculosis.

Baginsky, A.: Gonorrheal Disease in Children. (*Archiv. f. Kinderhk.*, Vol. xxxvi., 1903, p. 169.)

A newly-born male infant had a very mild ophthalmia. The cord fell off on the tenth day, but the umbilicus remained red and discharged some pus. There was one small ulcer on the right side of the roof of the mouth. The skin covering the penis was red and edematous, and a small ulcer, covered with pus, was present on the upper side of the prepuce. The inguinal glands were swollen. The skin around the umbilicus was reddened, the inflammation reaching to the axillary line above and to three finger breadths from the navel below. Typical gonococci were found in the pus from the umbilicus and from the penis. Staphylococci and pneumococci were also present. The ulcer in the mouth was a simple one, and not of gonorrheal origin.

The child recovered perfectly. No similar case of gonorrheal umbilical infection has been reported. Attention is drawn to the possibility of infection by means of the hands, dressings, or instruments used by the midwife or nurse.

Perrin, M.: Pneumococcus Peritonitis in Children, Especially in Early Infancy. (*Rev. Mens. des Mal. de l'Enf.*, July, 1903, p. 294.)

The author's case was that of a three months' old baby, in whom the attack of peritonitis began suddenly with diarrhea, death occurring on the eighth day. At autopsy a diffuse purulent peritonitis was found, but no point of entrance for the pneumococcus could be discovered. It was probably, therefore, a hematogenous infection from the lung or nasopharynx, where the organism may exist without causing any local reaction.

Forty-six cases were collected from the literature, only one having been younger than this case. The majority occurred in children from nineteen months to five years of age.

Pacchioni: A Case of Purulent Cerebrospinal Meningitis Due to the Hemophile Bacterium. (*Arch. di Patalog. e Clin. infant.*, Vol. ii., No. 2, p. 56.)

Pacchioni describes the case of a child of twelve months, who had had a febrile disease accompanied by an eruption, which was thought to be measles, and who afterwards was seized with arthritis of the right shoulder, followed by a fatal form of cerebrospinal meningitis in twenty days. On examining the pus from the affected joint, as well as from the cerebrospinal cavity, the author found a variety of germs that were decolorized with Gram, but in cultures taken from these fluids he obtained a rod-like organism, which was pathogenic in animals. A cubic centimetre of the broth culture, injected into the cerebrospinal cavity of a rabbit, killed it in twenty-four hours with the phenomena of meningitis. The microorganism in question, isolated from the central nervous system of this animal, showed a marked increase in virulence. In a dog, however, an injection of it into the cephalorrachidian cavity did not induce any lesions.

Mensi, E.: Pathology of Splenic Anemia of Infants. (*Arch. di Patolog. e Clin. infant.*, Vol. ii., No. 3–4, p. 108.)

Mensi found in a case of splenic anemia in an infant, that came to the autopsy table, an enlarged spleen with sclerosis of the pulp and the Malpighian corpuscles.

Cultures from this infant's blood and from the spleen-liquid taken during life were found to be negative. The child's death was caused by an intercurrent bronchopneumonia, but previously the administration of the spleen of a calf had been followed by improvement.

Mensi, E.: The Origin and Function of the Corpuscles of Hassal. (*La Pediatria*, Vol. xi., No. 2, Wd., Ser. I., p. 65.)

A study of the corpuscles of Hassal, in regard to their origin and functions, led the author to conclude that these bodies are essential factors in the functional activity of the thymus gland, and that they are products of proliferative activity in the gland itself. This conclusion was reached after an examination of the thymus glands of a series of fifteen fetuses of various periods of development. The corpuscles of Hassal were not found before the fourth month of intrauterine life. A few appeared in the fourth and fifth months, and these were of small size. They gradually increased in numbers and dimensions until they attained their maximum the ninth month. The younger the animal the more manifest is the trophic influence of the thymus gland, and this reaches its maximum period during the ninth month of intrauterine life, *i.e.,* when the corpuscles are greatest in number.

Cattaneo, Cesare: The Toxicity of Ascarides. (*La Pediatria*, May, 1903, p. 257.)

The author investigated experimentally the rather important question as to the toxic powers of the ascarides. Some authors have recently denied all pathogenic powers in ascarides, but the truth is probably in the middle ground, neither extreme toxicity nor innocuousness being likely. Experiments on guinea-pigs were conducted by the author, in each case after the injection of a fluid in which the ascarides had been grown, and which closely resembled the intestinal juice. In these animals, pathological phenomena developed in every case, especially paralysis of the posterior limbs, as observed also by other authors, but in Cattaneo's animals there was no sign of convulsions. The cadavers of these animals were found to be sterile, and so no infection by accident had taken place. It is probable, therefore, that the ascarides produce a poison which is detrimental to the child's organism. The ascarides in the experiments quoted, evidently secreted a toxic substance which rendered poisonous the fluid in which they had been grown. The secretion of this poison is a phenomenon of the life of these worms, and therefore the negative results with the injection of the extracts of the dead bodies of ascarides are not astonishing.

Motchau, G. A.: Hepatic Changes in Children Suffering from Acute Infections and from Gastroenteritis. (*Dissertation*, St. Petersburg, 1903.)

The author examined the liver in 15 cases of diphtheria, scarlatina, measles and gastroenteritis in children of widely varying ages.

The postmortem changes were partly degenerative, partly inflammatory; swelling and metamorphosis of the protoplasm, congestion, lymph accumulation of growth of young connective tissue, the latter often choking the hepatic cells. In mixed infections and in scarlatina the lesions in the liver were marked in a direct ratio to the duration of the disease. In acute gastroenteritis inflammatory changes are always present. When interstitial lesions of the liver are well developed they closely resemble the anatomic picture of beginning cirrhosis.

MEDICINE.

Church, H. M.: Lactation and Pregnancy. (*Medical Chronicle*, September, 1903, p. 199.)

In 1,000 cases the writer has observed pregnancy occurring during lactation in 30. He considers pregnancy a contraindication to nursing. Ten cases are reported which go to support the following propositions:—(1) that the suckling was or became a delicate child, that he at one or other stage of his development suffered from some affection of the nervous system, and that he was the mentally weak one of the family; (2) that during lactation the embryo was prematurely expelled from the uterus, or, if it reached full time, that it, in many cases though not in all, did so with lowered vitality, and was handicapped in some way or other for the race of life; and (3) that the mother's health was generally undermined for a longer or a shorter time. Seldom would it appear that the mother had blood and strength enough for the welfare of the trio.

Fedoroff, W. P.: The Influence of Syphilis on Pregnancy. (*Journal Akousherst.*, June, 1903, p. 961.)

The author has sifted a large clinical material and sums up his inferences as follows:—

(1) On more than one-half of all cases, maternal syphilis, if acquired during pregnancy, exercises a deleterious influence over the unborn child. The time of infection is of little account. Mercurial treatment has great potency for good and may avert the evil outcome.

(2) Constitutional maternal syphilis, acquired before conception, affects the fetus in 38 per cent. of the cases. The remoter the date of infection and the more energetic the treatment, the better the outlook for the child. Here mixed treatment is indicated and is well-borne by the fetus.

(3) Tertiary maternal syphilis has no effect on the child, which is usually born healthy, though not always free from taint.

(4) In paternal syphilis the pregnant woman should receive large doses of iodids. The same applies to maternal syphilis without fresh secondary manifestations.

(5) The placenta plays a very important part in the transmission of syphilis between mother and fetus.

Pismennyi, N. N.: Epidemic Rötheln (Rubella). (*Medizin. Obosren.*, Vol. lix., No. 7, p. 504.)

The author has had an opportunity of observing two epidemics of German measles, and his own impressions, as well as careful perusal of reported cases, have led him to the conclusion that polymorphism is a characteristic feature of the affection, the fundamental type resembling measles, while varieties occur showing scarlatinal traits, or both in combination. The attempts to separate such varieties and group them as independent diseases must be declared a failure. Rubella may be defined as a specific contagious affection, which imitates now measles, now scarlet fever, then again both simultaneously. Such a definition includes the transitional and the atypical forms, making the creation of new clinical entities superfluous.

Popoff, A. W.: Diabetes Insipidus in Childhood. (*Medizin. Obosren.*, Vol. lix., No. 13, p. 3.)

Although diabetes insipidus is said to be less frequent than diabetes mellitus, the author has succeeded in collecting from Russian literature 12 cases of the former to 6 of the latter. These cases permit the following generalizations:—

The leading symptom of diabetes insipidus is polyuria, up to 5—10000 c.cm., daily. Intense thirst supervenes and emaciation soon follows. The specific gravity of the urine may fall to 1001.

The course is varied. The hereditary form is very persistent, although improvement takes place under proper treatment. In general, the disease interferes with the child's development. Death may occur from an intercurrent affection.

The treatment is based on the theory that diabetes insipidus is a nervous disease. Hence, narcotics and antispasmodics like morphin, belladonna, valerian and others are extensively employed. Warm baths and the constant electric current are also serviceable. However, complete recovery is almost out of question.

Kuhn, P.: On Erythema Nodosum. (*Archiv. f. Kinderhk.*, Vol. xxxvi., p. 195.)

From a study of 22 cases it was impossible to separate erythema nodosum from erythema multiforme as far as the cutaneous lesions go. An idiopathic and a symptomatic form of erythema nodosum were observed. The idiopathic variety is an infectious disease which affects children especially, runs a favorable course in the majority of cases, and is not followed by any severe sequelæ. To look upon the disease as an early evidence of tuberculosis in those whom it affects is unjustifiable. The attack lasted from two to three weeks on an average. Two cases followed an attack of angina. Fever was present in all, being remittent in type and ending by lysis. Desquamation was present in 3 cases. In no instance did cardiac complications remain, although mild and passing endo- and myocardiac affections were present in 7. Only two patients complained of joint pains, and of these one died two months later of tuberculous meningitis, and the other never showed any further rheumatic symptoms.

Heinemann: Psychoses and Disturbances of Speech Following Acute Febrile Diseases in Childhood. (*Archiv. f. Kinderhk.*, Vol. xxxvi., p. 173.)

Three cases following acute pneumonia were observed, in children aged two, three, and six years. In the youngest child the psychic disturbance began three days after the crisis, with delirium which became acutely maniacal in character, and then gave place to a depressed and melancholic state of mind. Periods of excitement alternated with depression, and cure was only effected after three weeks. Aphasia was present during this period, and amaurosis for five days. This form of acute aberration is the most common variety of psychic disturbance following acute febrile diseases.

The other 2 cases suffered from complete motor aphasia and an extremely depressed condition. The power of speech returned very gradually, so that it was not restored until three weeks after the onset. Both cases recovered completely, and are to be looked upon as a functional cerebral disturbance only.

Three other cases following typhoid fever occurred in children aged three and a half, nine, and thirteen years, respectively. The oldest child became maniacal, had hallucinations, and also periods of depression. This condition lasted three weeks, beginning with the decline of the fever. The youngest case developed aphasia during a relapse of the typhoid, and melancholia was present for three weeks. In the other case aphasia lasted but three days, no psychic disturbances being present.

The literature is exhaustively reviewed.

Guida, T.: Diagnosis of Pertussis. (*Arch. di Patolog. e Clin. infant.*, Vol. ii., No. 2, p. 64.)

Guida suggests the following method of examining a child in a case of suspected pertussis. The child is held in the arms in the usual way for throat examination, and the handle of a small spoon is introduced into the mouth. If the child resists and cries, it is better to wait until it opens its mouth and so to introduce the spoon handle when the opportunity occurs. Or, if the child be under three years of age, the handle of the spoon is introduced between the lips, and is carried on the side of the mouth between the second molars, pressing the base of the tongue downward. The mouth is then quickly opened. The spoon-handle is carried back to the base of the tongue and pressed upon, so that the epiglottis comes into view. At this moment an access of cough will occur, which, if typical, may be at once recognized as pertussis, and if not typical will be of short duration and of milder character. This procedure is better and less violent than the method of Variot, who advises that an access of cough be induced by introducing the index finger into the mouth, forcibly raising the epiglottis and pressing upon the vocal cords. This method gives rise to a very violent access of cough.

Galvagno, P.: Gonorrheal Peritonitis in Children. (*Arch. di Patolog. e Clin. infant.*, Vol. ii., No. 3–4, p. 73.)

Galvagno presents 3 cases of subacute or chronic gonorrheal peritonitis in little girls, following gonorrheal vulvovaginitis. There are now about 35 cases of this kind on record, with a mortality of about 20 per cent. Evidently, the germ in these invasions of the peritoneum has not developed its full virulence, as the course is rather mild, and the prognosis fair. The author thinks that the number of cases of this kind on record is but a small fraction of the cases that actually occur, but the diagnosis is rarely made. The treatment should be directed, first of all, against the vulvovaginitis. For the peritoneal involvement there should be rest in bed, warm compresses to the abdomen, mild laxatives, and the use of iodids internally if there be a serofibrinous exudate with adhesions. Localized peritonitis of gonorrheal origin is not infrequent, but as late as 1896 Kiefer declared that he had not found a single case of diffuse gonorrheal peritonitis in literature. The author has been able to find, altogether, about 24 cases recorded in literature, of which 10 were in children. The peritoneum of children is more susceptible to infection than that of adults. The prevention of vulvovaginitis in girls is a very important phase of prophylaxis.

Basile, N. S.: Diazo Reaction in Chloroformed Children. (*Arch. di Patolog. e Clin. infant.*, Vol. ii., No. 3–4, p. 92.)

The author concludes an extensive research on the subject named above, in the following postulates: (1) The diazo reaction does not occur in normal children. (2) It occurs, however, in varying intensity in children that have been subjected to chloroform anesthesia. (3) This is due to two factors: (*a*) The altered conditions of metabolism owing to the transitory acute intoxication of the chloroform, and (*b*) the absorption of septic material during the operation.

Mensi, E.: Affections of the Kidneys in Nurslings. (*Arch. di Patolog. e Clin. infant.*, Vol. ii., No. 3-4, p. 109.)

The author presented before the Italian Society of Pediatrics a series of 12 cases of renal affections in infants. Of these some did not present any cutaneous phenomena, while others showed sclerema and still others scleredema. One showed only uremic convulsions. He insists upon the clinical differentiation of sclerema and scleredema. In scleredema the important features are the septic and the bronchopulmonary affection, and the changes in the kidneys. The infective-renal theory cannot be always invoked, however, in the etiology of these cases, and in some instances the cause of the disease lies, in all probability, simply in the immaturity of the organism, and the lack of full development in the kidneys.

Cao: Diphtheria in Cagliari in the Decennium, 1892-1901. (*Giornale della Societa Reale Italiana d'Igiene,* 1903, No. 2, no page given.)

The author concludes from statistical researches on the subject of diphtheria in Cagliari, Italy, during the last decade, that the disease has been endemic, but has not produced true epidemics in that city; that the number of cases has steadily diminished, so that the figures were lower than those for the entire country, and that during the last five years the diminution was most marked, owing to the advent of serum-therapy.

Filia: Nephritis after Impetigo in Infancy. (*Policlinico, Sez. Pratica,* 1903, No. 16.)

The relation between impetiginous eczema and nephritis has been established, first by Ferreira, and then by Canali, Guaita Concetti, Baginsky and others. Concetti, in 2 cases, found the staphylococcus and streptococcus in both lesions and the same germs figured in 3 cases reported by Spolverini. The streptococcus was also found by the present author in 6 cases of nephritis following impetigo, and the urine contained it almost in pure culture. On examining the blood, the streptococcus was found in 29 cases, while the diplococcus was present in 4, the blood in these cases representing the connection between the cutaneous and the renal infections.

Rudsky, A. P.: Gonorrheal Vulvovaginitis in Childhood. (*Medizin. Obosren.,* Vol. Ix., No. 18, p. 385.)

The author gives a survey of the literature on this subject and deplores the lack of unity in the views and opinions of authorities. He then reports a series of fourteen original observations, making the following generalizations:—

In all 14 cases the urethra was involved, though macroscopic evidence of urethral inflammation was not always present. However, a little secretion could be obtained, and the microscope settled all doubt.

As complications there were present:—Eczema of the thigh twice; cystitis once; anemia and emaciation once; transient knee-pains once.

The disease showed a tendency to chronicity, several months having been required for a cure.

The diagnosis cannot be positive without the microscope, and repeated examinations should be made before a cure is pronounced to be permanent.

The local treatment demands the application of antigonococcic remedies, preferable silver-salts. Solutions of protargol and largin (½-1 per cent.), injected by means of a soft nozzle, have been well borne. Treatment must be continued for some time after the gonococci have disappeared from the secretions.

Cesarani: Daily Intermittent Fever in Whooping-Cough. (*Riforma Medica,* 1903, No. 9.)

The author reports a case of convulsive cough in which there was daily intermittent fever during the spasmodic period. The fever was not preceded by chills and the paroxysms lasted about eleven days. Quinin did not affect them in the slightest degree.

Rist and Salomon: Hereditary Syphilis of Hepato-Splenic Localization with Icterus and Subumbilical Edema. (*Rev. Mens des Mal. de l'Enf.*, September, 1903, p. 385.)

A female infant, whose father was syphilitic, was apparently in good health until two months old, when icterus appeared. There had never been any skin eruption nor any coryza. Gastro-intestinal disturbance and edema of the legs followed the icterus, which persisted. The liver and spleen became much enlarged. Coryza and nasal hemorrhages appeared before death at the age of nine months. The autopsy showed a diffuse interstitial hepatitis. The spleen was large and firm. The kidney showed no abnormality, and there were no gummata in any viscus. The edema was not explained, unless one admits the possibility of compression of the inferior vena cava by the hypertrophied liver.

The infection took place during the early part of intrauterine life, and the course argues an attenuation of the virulence of the paternal infection.

Labbé, R.: Alimentary Chloruria in Scarlet Fever and Diphtheria During Childhood. (*Arch. de Méd. des Enf.*, September, 1903, p. 513.)

In scarlet fever, both at the onset and during the decline of the disease, the tests for alimentary chloruria give results which are apparently normal. The elimination of the chlorids does not always cease abruptly when the ingestion of sodium chlorids is stopped.

In diphtheria the reaction of the urine may be retarded, or diminished in severe cases. Absolute retention was noted only in 2 fatal cases of diphtheria, these being the only cases under observation which ended fatally. In both the kidneys were affected, as proved clinically and histologically.

Bourcart, G.: The Persistence of Diphtheria Bacilli in Convalescents from the Disease and their Presence in the Throats of Healthy Subjects in Contact with Diphtheria Patients. (*Rev. Mens. des Mal. de l'Enf.*, September, 1903, p. 393.)

The author's researches confirm the results of previous observers. He found that the Klebs-Löffler bacilli may be present in the throat of healthy subjects who have not had diphtheria recently, but such an occurrence must be considered as exceptional. Even in the case of persons in contact with diphtheria patients positive results are rare.

In the case of diphtheria patients treated with antitoxic serum, the bacilli disappear with the false membrane in 65 per cent. of the cases, persist for some days after convalescence is established in 20 per cent., and remain for a longer time in only 15 per cent. In exceptional cases they may remain in the throat for several months.

When examining the throat or nose of a subject at frequent intervals, it is sometimes noticed that, after the disappearance of the false membrane, the bacilli take on atypical forms, and these atypical organisms are generally less virulent than are the typical ones.

Comby, J.: Apophyseal Osteitis of Growth. (*Arch. de Méd. des Enf.*, September, 1903, p. 533.)

There is an attenuated form of osteitis which occurs during later childhood and adolescence in subjects who are growing rapidly; it affects especially the antero-superior tibial tuberosities, and is perhaps more common in girls than in boys. It is symmetrically bilateral, but may affect only one side. A visible swelling appears, without heat or fluctuation, the chief symptom being pain and the general condition remaining unaffected. The knee joint is not involved.

Although the course may be prolonged, resolution occurs and the affection is a benign one. The treatment should be rest in bed for a week or more, counterirritation (iodin) and later the avoidance of fatigue and the administration of cod-liver oil or glycerophosphate of lime.

SURGERY.

Berg, H. W.: Chronic Postdiphtheritic Laryngeal Stenosis as a Cause of Persistent Intubation of the Larynx. (*Medical Record,* August 1, 1903, p. 161.)

The cases requiring persistent intubation are of three classes:—

(1) Cases of prolonged stenosis in which the original conditions which necessitated the intubation persist beyond the usual length of time.

(2) Cases of prolonged stenosis, due to pathological changes which have arisen during or subsequent to the primary intubation, and are not those of the diphtheritic process which necessitated the primary intubation. Such lesions are due (*a*) to the injurious effect of the intubation tube upon the structures of the glottis, larynx, or trachea; (*b*) to traumatism produced by the operator either during intubation or extubation.

(3) Cases of persistent intubation due to paralysis of the vocal cords: (*a*) temporary paralysis or spasm: (*b*) persistent paralysis.

Fourteen cases in the hospital have been treated by persistent intubation. Of the 14 cases, 5 have died, 7 have been discharged cured. Of those that have died, one, C. S., was discharged as cured of prolonged intubation. Outside of the hospital she developed sudden stenosis. An attempt was made by a physician in her home to intubate—unsuccessful. She was sent into the hospital moribund. Died December 5, 1902. Autopsy showed traumatism of the larynx and stenosis, due to cicatricial contracture after decubitus, with ulceration. This cicatricial stricture almost completely obliterated the larynx.

Brodführer: A Case of Congenital Umbilical Cord Hernia. (*Die Med. Woche*, August 3, 1903, p. 349.)

A newly-born, well-nourished infant had a tumor at the umbilicus as large as an orange. The liver could be palpated in the tumor, which could not be reduced through the umbilical ring. A radical operation, without narcosis, was performed, and the liver replaced with difficulty. On account of repeated prolapse of intestinal loops the umbilical ring had to be excised before the abdominal walls could be closed. The child made a good recovery, but died of acute gastroenteritis at the age of sixty-five days. No autopsy was permitted. The case was one of ectopia of the viscera (through a slit in the peritoneum and abdominal wall) into the umbilical cord. The date of its development is during the third or fourth month of fetal life.

Bary, J. de: Pneumatocele Cranii Occipitalis. (*Archiv. f. Kinderhk.*, Vol. xxxvii., p. 44.)

A three-year-old girl of tuberculous family had presented scrofulous symptoms since early infancy. She developed an otitis media, severe coryza and suppurative adenitis. These and the general condition were improving, when a swelling as large as an apple appeared on the right side of the head, extending from the squamous suture to the mastoid process. It was not tender. Puncture withdrew a drop of blood and some air. When the child cried the swelling increased markedly in size. It was tympanitic, and covered by normal skin. In two weeks it had disappeared entirely.

The case is the youngest ever reported, and also the only one observed from its onset and cured spontaneously. The otitis media suppurative had probably caused some caries of the mastoid process, and thus stood in causal relationship to the development of the tumor. Röntgen ray pictures were not conclusive.

HYGIENE AND THERAPEUTICS.

Racchi, Giovanni: Treatment of Splenic Anemia of Infants. (*La Pediatria*, Vol. xi., No. 2, 2d Ser. I., p. 90.)

Racchi reports 3 cases of anemia splenica in infants which he treated with the disodic salt of methylarsenious acid. A variety of theories are held as regards the cause of this disease, and also a great number of different drugs have been employed in its treatment. The most satisfactory, thus far, have been quinin and arsenic. The results obtained with the methylarseniate were very good. The question as to how this remedy acts may be solved in two ways:—Either it increases the number of the large polymorphous mononuclear cells, *i.e.*, of those white cells that are richest in antitoxic properties; or, that it increases the activity of the receptors or collateral chains of the red cells, thus neutralizing the solvent action of the toxins, which are produced in the spleen and are poured into the blood.

Achwlediani, D. F.: Noma Cured by Blue Pyoktanin. (*Mediz. Obos.*, Vol. lx., No. 17, p. 354.)

There are two reports in Russian literature of noma cured by blue pyoktanin employed externally. The author adds a third case. A girl of three and one-half years was the patient, and the ulcer had eaten away the entire soft parts of the nose, spreading further to the angle of the mouth. Without losing time with other measures, blue pyoktanin was applied in 1 per cent. strength on compresses. Prompt improvement followed and in two weeks the cure was complete.

Troitsky, I. W.: Narrow Chest in Childhood. (*Russki Vratch*, September 27, 1903, p. 1,345.)

The viscera of the thorax, heart and lungs, are of the greatest importance to the growing and developing organism. Hence the manifold disturbances which are apt to follow in the wake of a distorted, diseased or undeveloped chest.

All authorities agree in accepting the ratio of the chest-circumference to one-half the body-height as the most reliable indicator of regular physical development in general, and of thoracic development in particular. Every marked departure of this relation from the normal average is pathological. It has been found by actual measurement that during the first year of life the chest circumference exceeds one-half the body-height by 6-10 cm. (2½-

4 inches). Between two to eight years this difference falls to 2.5-8.0 cm. (1¼-3¼ inches), and with nine years the circumference of the chest is almost equal to one-half bodily length. The age of nine to ten years shows the chest gaining 1½-2 cm. on the body, while the eleventh year again equalizes the two magnitudes ("second equation"). From twelve to sixteen the chest lags behind the height, but after that period a "third equation" is soon restored.

These are no accidental figures. The viscera encased in the thorax develop in marked harmony with the ratio just described, and it is an evident inference that any marked anomaly of chest development will have a pernicious effect on the organs within.

Experience bears out this deduction completely. It has long been noted that numerous disorders of childhood have their origin in faulty chest-growth with the consequent insufficient blood-aeration and poor circulation. Thus adenoid vegetation, digestive troubles, anemia, sexual irritation, nervousness and a host of others have been observed to accompany undeveloped chests and have been cured or benefited by proper breathing exercises and suitable chest-gymnastics.

The author makes an eloquent plea for a harmonious development of the child, even at the expense of early study; and drilling games, excursions, sports and open-air life generally, should be encouraged at all events, while marked chest anomalies call for special gymnastics and massage of the upper half of the body, together with appropriate internal remedies.

Monti: Infant Feeding with Mother's Milk. (*Archiv. für Kinderhk.*, Vol. xxxvii., p. 51.)

The only food which promises any certainty of the physiological development of infants is mother's milk, provided that certain rules are followed. In the interest of the undisturbed development of the child, nursing by his own mother is indicated; but when this is impossible, a healthy wet-nurse should be employed. Artificial feeding should be limited to a few necessary cases, because such feeding is the source of a higher mortality rate and of many dyscrasias which interfere with the strength of the child in later life.

The nursing of infants should be made accessible to all classes; and for that reason institutions should be built in which children can be wet-nursed, or else nursing women should be paid to nurse a strange infant as well as their own. The wet-nurses must be regulated and inspected by law.

Were all efforts directed toward making feeding by mother's milk generally possible, instead of helping to improve artificial feeding, the pitiable conditions met with in children's clinics would soon improve, and the coming generation become healthy and blooming as of old, and not weaker year by year.

Ostrogradski, B.: Lumbar Puncture and Its Clinical Significance. (*Dissertation*, Moscow, 1903.)

The best site for diagnostic or therapeutic lumbar puncture is the hiatus sacrolumbalis, *i.e.*, the fifth lumbar interspace. The presence of tubercle bacilli in the cerebrospinal fluid establishes the diagnosis of tubercular meningitis beyond all doubt. In high intracranial pressure this little operation is indicated for therapeutic purposes. Headache in acute meningeal inflammation is a signal for the employment of lumbar puncture. If in intracranial hemorrhages the microscope reveals blood in the cerebrospinal fluid then trepanation is indicated. Often the lumbar puncture will make the trepan unnecessary. In private practice lumbar puncture should not be performed, but only in hospitals.

The pain caused by the puncture does not exceed that of tapping the pleural cavity. The needle is inserted a few millimetres ¼-½ inch) from the middle line. No aspiration is practised, as convulsions may follow. The fluid is best evacuated slowly, the quantity varying considerably (from 8 c.cm. to 25 c.cm., 40 c.cm., or even 112 c.cm. in the author's cases).

Schulthess, H.: Hematuria Following the Ingestion of Rhubarb. (*Correspondenzblatt f. Schweizer Aerzte*, 1903, No. 18.)

A boy of seven years, after having eaten about three ounces of a rhubarb dish, passed several hours later bloody urine which contained abundant oxalates. Otherwise the boy was perfectly well.

Evidently the hematuria was caused by the acid irritating the kidneys. It could be estimated that the boy consumed about ten grains oxalic acid with his rhubarb. A large single non-toxic dose of oxalic acid is given as eight grains, thirty grains being the toxic and one dram the fatal dose. The boy thus swallowed less than the toxic quantity, hence the absence of poisoning.

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Original Communications.

A STUDY OF THREE HUNDRED AND THIRTY-SEVEN CASES OF ENTERIC FEVER IN CHILDREN.*

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In a study of 337 cases of enteric fever treated in the Children's Hospital, District of Columbia, many obstacles, some insurmountable, were encountered. The period over which the investigation extends has been divided into three decades which seem to conform to the change of ideas respecting this particular disease.

During the first decade all cases of typhomalarial fever were excluded, because they were then thought to be a distinct disease possessing only a few symptoms similar to those found in enteric fever. During the second decade, these were included because by common consent all typhomalarial cases were then recognized as enteric. In the third decade cases of mixed infection which in their clinical and pathological phenomena were identical with the typhomalarial diseases of the previous decades have been incorporated. There might have been justification in swelling the number by including the many cases recorded in the first fifteen years under the headings *infantile remittent, remittent, continued* and *irregular* fevers, because I was then serving as an assistant physician in the hospital, and, in the light of our present knowledge, I now believe that such cases were genuine enteric fever. In spite of the fact that continuous connection with the hospital since 1876 has given me ample opportunities for careful study of these cases I do not feel justified in changing the diagnoses made by my predecessors.

In the earlier years of practice I was among the *few* who did not believe in the immunity of infants and young children from enteric fever. When some advanced the opinion (from which they have fortunately receded) that infants rarely, if ever, had enteric fever, and supported it by their failure to find the intestinal lesions of the disease in a large number of necropsies, I strenuously contended that infants and young children had a disease which clinically was the analogue of enteric fever in the adult, and shortly, thereafter, presented the intestine from an infant showing lesions identical with those found in adults who had died of enteric fever. During the past ten years, I have seen an epidemic in one of our institutions which spent its force upon infants under one year of age. The clinical phenomena, including direct infection, were those of enteric fever, and I presented a specimen from one of the cases which showed ulceration and perforation of the ileum. Of late all doubts on this point have been dispelled by pediatrists generally. The acceptance of the theory of immunity unquestionably obscured the diagnosis in a number of cases which might otherwise have added to the interest of this paper.

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* Read at a meeting of the Medical and Chirurgical Faculty of Maryland, November 6, 1903.

Enteric fever in the child differs in degree only from that in the adult. While the clinical phenomena differ somewhat, the structural changes are identical, regardless of age.

There has been an annual increase in the number of cases treated in the hospital relative to the whole number of patients admitted. This has been about uniform, except in two instances, when it was much greater owing to the prevalence of enteric fever, in epidemic form, in the city.

SEASON.—Of the 337 cases, 210 (62.31 per cent.) were admitted during July, August and September.

TABLE SHOWING CASES ADMITTED BY MONTHS.

January	18	July	43
February	8	August	98
March	6	September	69
April	5	October	31
May	4	November	28
June	14	December	13

SEX.—One hundred and seventy-two boys and 165 girls were treated, this being about the proportion in adults admitted to general hospitals.

AGE.—At the organization of the hospital the maximum age of children admitted was fifteen years and the minimum two years. The maximum was gradually lowered until in 1888 it was fixed at twelve years, which accounts for the small number between twelve and fifteen years. There is a decided increase in the number admitted after the fourth year, which may be due to increased susceptibility at the beginning of school-life.

TABLE SHOWING AGES.

One year, - -	1 case	Nine years, -	37 cases
Two years, -	13 cases	Ten years, - -	43 cases
Three years, -	17 cases	Eleven years, -	49 cases
Four years, - -	14 cases	Twelve years, -	18 cases
Five years, - -	26 cases	Thirteen years,	3 cases
Six years, - -	35 cases	Fourteen years,	3 cases
Seven years, -	42 cases	Fifteen years, -	5 cases
Eight years, -	31 cases		

MODE OF CONVEYANCE.—It is a singular coincidence that the first case of enteric fever treated was attributed to the eating of oysters. This was in 1872, and yet it was quite twenty-five years thereafter before the oyster was recognized as a carrier of typhoid bacilli. Three cases were attributed to polluted milk, 25 to water, and 27 to contagion. In 282 cases no record was made as to the mode of conveyance. In the 27 cases attributed to contagion there was in every case evidence of direct exposure, in many instances several cases having occurred in the same family. The proof is positive in several cases where *water* is mentioned as the medium. These cases came from a locality where enteric fever was epidemic at the time of their admission. The children, as well as many, if not all, of those affected, had drunk the water from a neighboring well, which, upon examination, was found to contain the colon and other bacilli, together with fecal matter.

MORBID ANATOMY.—In 37 cases the necropsy revealed the characteristic lesions and in addition structural changes in the other organs. In 11 necropsies were not permitted.

Perforation was found in 11 cases, all being of the ileum. In 1 case three perforations were found, in 2 cases two, and in the remainder but one.

Hemorrhage.—Nineteen deaths resulted from hemorrhage, but in no instance could the bleeding vessel be found.

Rose Spots	Sex	Age	Date of Admission	Widal	Infection	Necropsy	Perforation	Complications	Onset
..	F	11	1872	......	Oysters	Diagnosis correct	..	Bronchitis	Sudden
..	M	15	Oct. 16, '72	......	....	....	..	Neuritis	Synovitis
..	F	13	Oct., '74	......	....	....	..	Pleurisy and Neuritis	Insidious
..	F	8	Sept., '75	......	....	....	..	....	Insidious
1	M	8	Oct., '75	......	....	....	..	Nervous	Insidious
1	F	2½	Oct., '75	......	....	....	..	....	Insidious
..	F	12	Jan., '76	......	....	....	..	Sweats	Headache
..	M	4	Oct., '77	......	....	Diagnosis correct: Ulceration	..	Pulmonary	Sudden, Vomiting
..	F	14	Aug., '77	......	....	....	..	....	Vague pains
..	M	4	Sept., '78	......	....	....	..	Scarlatina	Malaise
..	M	13	Aug., '78	......	....	....	..	Bronchitis	Epistaxis
1	F	12	Oct., '79	......	....	....	..	....	Chills
..	M	5	Aug., '79	......	....	....	..	Tympanites	Insidious
..	F	10	Nov., '80	......	....	....	..	....	Diarrhea
1	F	11	Nov., '80	......	....	Diagnosis correct: Emphysema	..	Bronchitis	Chills, Cough
1	F	16	Nov., '80	......	Contagium	....	..	Tympanites	Malaise
..	M	12	Aug., '81	......	Water	....	..	....	Gastrointestinal
..	F	2	Aug., '81	......	....	Diag.correct: Pericard.,Adenitis	..	Nervous	Delirium and Com
..	F	9	Sept., '81	......	Contagium	....	..	....	Stupor
..	F	3	Sept., '81	......	....	....	..	Parotid Abscess	Malaise
..	F	12	Sept., '81	......	Contagium	....	..	....	Headache
..	F	16	Oct., '81	......	Water	....	..	Pleurisy, Malaria	Insidious
..	F	9	Nov., '81	......	....	....	..	Adenitis, Tympanites	Diarrhea, Debility
..	M	6	Aug., '81	......	....	....	..	Vomiting	Diarrhea
1	M	10	Aug., '81	......	Water	....	..	Bronchitis and Insomnia	Insidious
..	M	11	July, '81	......	....	Pneumonia and Pleurisy	..	Bronchitis	Stupor
..	F	7	Aug., '82	......	....	....	..	Insomnia	Insidious
1	M	14	Aug., '82	......	Milk	Perforations, 2; last 9-in. Ileum	1	Bronchitis, Petechiæ	Chill
..	F	9	Sept., '82	......	....	....	..	Herpes, with Enuresis	Malaise
1	M	5	Dec., '83	......	....	....	..	Tympanites	Malaise
1	M	7	Aug., '83	......	....	....	..	Erythema	Fever
1	M	14	Aug., '83	......	....	Peritonitis: Perforations, 2; last 2-in. Ileum	1	Vomiting and Peritonitis	Chill
..	M	3	Jan., '83	......	....	....	..	....	Fever
1	M	6	Jan., '83	......	Contagium	Ulceration	..	Cancrum Oris	Chills
..	M	13	Aug., '83	......	....	....	..	....	Insidious
..	F	5	Sept., '83	......	....	Ulcerations: Perfor. lower Ileum	1	Diarrhea and Adenitis	Gastrointestinal
..	M	6	Oct., '84	......	....	....	..	Bronchitis	Intestinal
..	M	7	Sept., '84	......	....	Perforation lower Ileum	1	Nervous	Insidious
..	F	15	Nov., '86	......	Contagium	....	..	Urticaria	"
..	M	5	Aug., '87	......	"	....	..	....	"
1	M	10	Aug., '87	......	"	....	..	Meteorism	Acutegastric
..	F	16	Aug., '87	......	"	....	..	....	Insidious
..	F	7	Aug., '87	......	"	....	..	....	"
1	F	11	Nov., '87	......	....	....	..	Bronchitis	Diarrhea
..	F	11	Oct., '87	......	....	....	..	Hemorrhage	Insidious
1	M	11	Aug., '87	......	Milk	Diagnosis correct: Ulceration	..	Furunculosis	Malaise
..	F	12	Aug., '87	.....	....	Diagnosis correct	..	Pulmon.Conges., Edema Larynx	Delirium
..	M	7	Aug., '88	......	Contagium	....	..	Bronchitis	Insidious
..	F	8	Sept., '88	......	"	....	..	Meteorism	"
..	M	10	Sept., '88	......	....	....	..	....	"
..	M	10	Oct., '88	......	....	....	..	Pericard., Endocard., Bronchitis	Malaise
1	F	12	Aug., '88	......	....	....	..	Vomiting	Insidious
..	F	6	Dec., '88	......	....	....	..	Pneumonia	Cough
..	F	12	Aug., '88	......	....	Diag. correct: Pulmon. Congest.	..	Bronchitis, Alveolar Periostitis	Insidious
..	M	3	July, '89	......	....	....	..	....	"
..	F	9	July, '89	......	....	....	..	Bronchitis	Acute Vomiting
1	M	10	Aug., '89	......	Contagium	....	..	....	Fever
..	M	6	Oct., '89	......	....	....	..	Bronchitis	Insidious
..	M	7	Sept., '90	......	....	....	..	....	Diarrhea
1	F	10	July, '90	......	....	....	..	Psoriasis	Fever
..	F	9	Nov., '90	......	....	....	..	Tonsillitis	Chills
..	M	5	Sept., '90	......	....	....	..	....	Insidious
..	M	11	Sept., '90	......	....	....	..	Parotid Abscess	"
..	M	11	Sept., '90	......	....	Diagnosis correct: Ulceration	..	Aphonia	"
..	M	9	Dec., '90	......	....	....	..	Pneumonia followed by Measles	Cough
..	F	8	Nov., '90	......	....	....	..	Endocarditis, Bronchitis, Herpes	Fever
..	M	12	April, '90	......	....	....	..	....	Chills
1	M	10	April. '90	......	....	....	..	....	Nausea

1 = yes

Fever-type	Chills	Hemorrhages	Epistaxis	Spleen Enlarged	Pneumonia	Delirium	Convulsions	Kidneys	Variety	Result	Treatment
ont. intermit.; lysis	1	..	1	1	..	Yes; wild		Nephritis	Severe	Death	Quinin, opium
ow, cont.; lysis	..	..	1	1	..				Mild	Cured	Quinin, nitre
ow, irregular; crisis	..	..	1	1	1	Low, muttering			Low, irreg.	"	Kalium bromid, quinin, nitre
ont. remittent; lysis	..	..	1	..	..	Subsultus			Irregular	"	Quinin and whiskey
ontinued; lysis	..	..	..	..	..	Low			Mild	"	Quinin and bismuth
rregular	..	..	..	1	..				Mild	"	Sponge, quinin, calomel
ont.; relapse; lysis	1	..	..	..	..	Maniacal			Mod. severe	"	Kalium bromid, quinin, bism.
ontinued; lysis	..	..	..	..	1	Wild			Severe	Death	Amm. carb. and whiskey
ont.; relapse: lysis	1	..	..	..	..				Mild	Cured	Quinin, bismuth, calomel
ont. intermit.; lysis	..	..	1	1	..				Mod. severe	Death	Quinin, ol. ricini
" " "	..	..	1	1	..	Low			Mild	Cured	Quinin
ontinued, low	1	..	..	..	..		Nausea		Mild	"	"Pudding diet," quinin
"	..	..	..	..	..	Collapse			Severe	Death	Salic. acid, quinin, hydrother.
" lysis	1	..	..	..	..				Mild	Cured	Bismuth, tr. opii camphor.
" remit.; lysis	1	..	1	1	..	Coma	1	Albuminuria	Severe	Death	Quinin, bismuth, digitalis
ow, intermittent	1	3	1	1	1	Wild		Nephritis	Severe	Cured	Quinin, lead, bismuth, opii
ont., "	..	..	..	1	..	Low			Mild	"	Quinin, bismuth, calomel
" lysis	..	..	1	..	..	Subsultus	1	Nephritis	Mod. severe	Death	Nitre, bromid and quinin
" "	1	..	1	..	..	Low, muttering			Mod. severe	Cured	Quinin, bromid
" septic; crisis	1	..	..	1	1	Stupor	1		Severe	"	Quinin, surgical, iodin
" recrudescence	..	..	..	1	..	Low		Nephritis	Mild	"	Sponge, quinin, bismuth
" relapse; remit.	1	..	..	1	..	Restless			Mild	"	Quinin, amm. mur., sponge
" remittent; septic	1	..	1	..	..	Low, stupor			Mod. severe	"	Quinin and sponge
" intermit.; lysis	..	..	1	..	..	Wild, coma	1		Very severe	Death	Quinin, kalium bromid, spg.
" relapse; lysis	..	..	1	..	..				Severe	Cured	Quin., chlor. hydr., nitre, spg.
" remittent; low	..	1	..	..	1	Carphologia, tremors			Severe	Death	Whiskey, kalium bromid, spg.
" low; lysis	..	..	1	1	..	Stupor			Mild	Cured	Quinin, bismuth
" crisis	1	1	1	1	..	Low			Very severe	Death	Quin., bism., sponge, whiskey
ow, irregular	..	..	1	1	..				Mild	Cured	Quinin, ol. ricini
ontinued, low; lysis	1	..	1	..	..	Low			Mild	"	Quinin, digitalis, cod liver oil
" lysis	..	..	1	1	..				Mild	"	Calomel and sponge
ow, irregular; lysis	1	1	1	1	..	Low			Severe	Death	Strychnin, whiskey, sponge
ontinued: lysis	..	..	..	1	..				Mild	Cured	Quinin
" septic; lysis	1	..	..	1	..	Muttering			Severe	Death	Whiskey, $AgNO_3$, sponge.
" intermit.; lysis	1	..	1	..	..	Low			Mild	Cured	Quinin and tr. opii camphor.
" high; lysis	..	..	1	1	..	Low			Severe	Death	Quinin, digitalis, opium, spg.
ow, remittent; lysis	1	..	1	1	..				Mild	Cured	Quinin and sponge
ontinued; crisis	..	1	..	1	..	Low			Severe	Death	Quinin, strychnin, sponge
ypical	..	..	..	1	..				Mild	Cured	Quinin
ontinued; lysis	..	..	..	..	..	Mild			Mild	"	Antipyrin, ol. ricini
" relapse; lysis	..	..	1	1	..				Mod. severe	"	Whiskey, antipyr., turpentine
" low; lysis	..	..	1	1	..				Mild	"	Antipyrin, sponge
" " relapse	..	..	..	..	..				Mild	"	Nitre and sponge
regular, intermittent	..	..	..	1	..				Mild	"	Antipyrin, $H_2 SO_4$ dil.
ontinued, low; lysis	1	1	1	1	..	Low			Mod. severe	"	Antipyrin and "pudding diet"
ypical, subnormal	..	..	..	1	..	Low			Mild	Death	Antipyrin, digitalis, sponge
igh, irregular; lysis	..	1	..	1	1			Nephritis	Severe	"	Antipyrin, hotpack
nt., intermit.; lysis	..	..	..	1	..			Albuminuria	Mild	Cured	Antipyrin
regular; lysis	..	..	1	1	..				Mild	"	Antipyrin, digitalis, sponging
w, irregular; lysis	..	..	..	..	..				Mild	"	Antipyrin
regular, high "	..	..	1	..	..				Severe, mod.	"	Strophanthus, dig., spg., hydr.
nt.; relapse "	..	..	..	..	..				Mild	"	Antipyrin, and $H_2 SO_4$ dil.
" high; crisis	1	..	..	1	1	Low			Severe	"	Antipyrin, ammonia carb.
" septic; collapse	1	1	..	..	..	Wild	1		Severe	Death	Whiskey, caustics, antifebrin
" low; lysis	..	..	..	..	..				Mild (very)	Cured	Quinin
" remittent; lysis	..	..	..	..	..			Albuminuria	Mild	"	Quinin
" lysis	..	..	1	..	..				Mild	"	Quinin
" "	..	..	..	..	..				Mild	"	Antipyrin
regular, low; lysis	..	..	..	..	..				Mild	"	Antipyrin
ntinued; lysis	..	..	1	1	..				Mild	"	Quinin
" remit.; lysis	1	..	1	1	..				Sudoral	"	Quinin
" lysis	..	..	..	..	..				Mild	"	Quinin
" septic; lysis	..	..	1	..	..				Severe	"	Whiskey, surgical, sponge
" lysis	..	..	1	..	..	Wild (coma)	1		Severe	Death	Whiskey, ice cap, quinin
" "	..	..	1	..	1	Low			Severe, Mod.	Cured	Quinin and ammon. carb.
" irregular; lysis	..	..	..	..	..				Severe	"	Amm. carb., digitalis and quin.
" lysis	1	..	1	..	..				Mild	"	Quinin, whiskey, sponge
" "	..	..	1	1	.				Mild	"	H_2SO_4, arom., whiskey, spg.

1 = yes.

Rose Spots	Sex	Age	Date of Admission	Widal	Infection	Necropsy	Perforation	Complications	Onset
..	M	8	May, '90	......	Water	....	..	Hemorrhage	Acute
..	F	7	Nov., '91	......	....	....	..	....	Insidious
1	F	12	Nov., '91	......	....	....	..	Synovitis and Stomatitis	Fever
..	M	3	Sept., '91	......	....	....	..	Meteorism and Bronchitis	"
..	M	11	Dec., '91	......	....	....	..	Sudamina	Insidious
..	M	12	Dec., '91	......	....	....	..	Nephritis and Photophobia	Malaise
..	F	6	Aug., '91	......	....	....	..	Nervous	Insidious
..	M	12	Aug., '91	......	....	....	..	....	"
1	M	10	Aug., '91	......	....	....	..	Sudamina	"
..	F	8	Oct., '91	......	....	....	..	Photophobia	"
..	M	10	July, '91	......	....	....	..	Abscess, Head	Stupor
..	F	2	Aug., '91	......	....	....	..	....	Insidious
..	M	11	Nov., '91	......	....	Diagnosis correct: Ulceration	..	Edema Lungs and Meningitis	Delirium
..	M	10	July, '91	......	....	....	..	....	Insidious
..	M	6	Feb., '91	......	....	....	..	Pseudomembranous Angina	Gastrointestinal
..	M	9	July, '91	......	....	....	..	Otitis Media	Insidious
..	F	9	March, '91	......	....	....	..	Bronchitis	"
..	F	5	July, '92	......	....	Diagnosis correct: Ulceration	..	Vomiting and Anuria	Vomiting
1	F	9	Aug., '92	......	....	....	..	Meteorism	Gastric
..	M	11	Aug., '92	......	....	....	..	....	Insidious
..	M	9	Aug., '92	......	Contagium	....	..	Insanity	Malaise
..	F	7	Aug., '92	......	....	....	..	Pneumonia	Insidious
..	M	12	Jan., '92	......	....	....	..	Endocarditis, Nephritis	Articular
..	M	11	Oct., '92	......	....	....	..	....	Gastric
1	F	10	Sept., '92	......	....	....	..	....	Lassitude
..	M	10	Sept., '92	......	....	Diagnosis correct: Infiltrated	..	Gang., Stom., Hemor., Meteor'm	Sore Throat, Feve
..	M	7	Sept., '92	......	....	....	..	Pulmonary	Insidious
1	M	11	Oct., '92	......	....	....	..	....	"
1	M	12	Dec , '92	......	....	....	..	....	Vomiting
..	F	7	Sept., '93	......	....	....	..	....	Insidious
..	M	7	Aug., '93	......	....	....	..	Esophagismus	"
..	M	10	Aug., '93	......	....	....	..	....	Delirium
..	F	2	Sept., '93	......	....	Diag. correct: Congest., cerebral	..	Left Hemiphlegia	Gastrointestinal
1	M	9	Aug., '93	.. ...	....	....	..	Endocarditis	" "
..	M	11	Aug., '93	......	....	....	..	....	Insidious
..	M	7	Sept., '93	......	....	....	..	....	Chills
1	F	8	Aug., '93	......	....	....	..	Bronchitis	Insidious
..	M	10	Aug., '93	......	....	....	..	....	"
..	M	8	Aug., '93	......	....	....	..	....	"
..	F	6	Oct., '93	......	....	Diagnosis correct :	2	Hemorrhage	Diarrhea
..	M	6	Sept., '93	......	....	....	..	Gingivitis	Delirium
..	F	10	Sept., '93	......	....	....	..	....	Insidious
..	M	6	Aug., '93	......	Contagium	....	..	....	"
..	M	5	Sept. '93	......	"	....	..	....	"
..	M	6	June, '93	......	....	....	..	Erythema	Coryza
..	F	11	Aug., '93	......	....	....	..	Bronchitis	Cough
1	M	10	Aug., '93	......	Water	....	..	"Deafness"	Insidious
..	F	7	Aug , '93	......	....	....	..	Furunculosis	"
..	M	8	Aug., '93	......	Contagium	....	..	Adenitis	Adenitis
1	M	11	Aug., '93	......	"	....	..	....	Insidious
..	M	4	Oct., '93	......	....	....	..	....	Headache, Acute
..	M	9	Oct., '93	......	....	....	..	....	Sudden, Chills
..	F	11	June, '93	......	....	....	..	Pulmonary	Insidious
..	M	5	May, '93	......	....	....	..	....	Diarrhea
..	F	7	Aug., '93	......	....	....	..	Cerebral Irritation	Insidious
..	M	7	Aug., '93	......	....	Diagnosis correct: Cystitis	..	Tonsiliitis, Cystitis, Hematuria	"
..	M	4	Aug., '93	......	....	....	..	Cerebral Irritation	Chill, Fever, Acut
1	F	11	Nov., '93	......	Milk	....	..	....	Epig. pain, Diar.,
1	M	7	July, '94	......	Contagium	....	..	Pneumonia	Insidious [Vo
..	F	6	June, '94	......	Water	....	..	....	"
..	M	10	July, '94	.....	"	....	..	....	Vomiting
..	F	6	July, '94	......	....	....	..	....	Sudden, Epistaxis
1	M	10	July. '94	......	....	....	..	....	Chill, Acute
..	F	7	April, '94	......	....	....	..	Antrum Abscess, Cervical Adenitis, Necrosis Maxilia	Gastrointestinal
..	M	7	Aug., '94	.... .	Contagium	....	..	....	Insidious
..	F	3½	Sept., '94	......	....	....	..	....	"
..	F	4	Sept., '94	......	....	....	..	....	"
..	M	2	Oct., '94	......	....	....	..	Otitis Media	"

1 = yes.

Fever-type	Chills	Hemorrhages	Epistaxis	Spleen Enlarged	Pneumonia	Delirium	Convulsions	Kidneys	Variety	Result	Treatment
ont., high; collapse	..	1	..	..	..	......	......	......	Severe	Death	Pb. Acet., calomel
" remittent; lysis	..	.	1	1	..	......	......	......	Mod. severe	Cured	H_2SO_4, arom. and quinin
" intermittent "	..	..	..	1	..	Low	......	......	Mod. severe	"	Quinin, nitre, sponge
" (high), remit.;	..	..	1	..	..	Low	......	Albuminuria	Mod. severe	"	Acon , nitre, antipyr., whiskey
" lysis [relap.	..	.	..	..	..	Low	......	......	Mild	"	Diet and sponge [tipyrin
" remit.; relapse	..	1	1	1	..	Low	......	Nephritis	Severe	"	Tannic acid, ergot, quinin, an-
" intermit.; lysis	..	..	..	..	..	Coma vigil	......	......	Mod. severe	"	Quinin, whiskey and sponge
" " "	..	..	1	..	..	......	......	......	Mild	"	Quinin mur. and sponge
" remittent "	..		..	..	..	Low	......	......	Mild	"	H_2SO_4 dil. arom., sponge
" " "	..	..	..	..	..	Wild	......	......	Mod. severe	"	Quiuin and sponge
rregular, intermittent, post-typhoid rise	..	..	1	..	..	......	......	......	Mild	"	Quinin, digitalis, sponging
ont., lysis	..	..	..	..	..	Low	......	......	Mild	"	Quinin and nitre
" low; crisis	..	..	..	1	..	Acute	1	......	Severe	Death	Whiskey and sponging
" crisis	..	..	..	1	..	Active	......	......	Mod. severe	Cured	H_2SO_4 dil., sponging
" septic; lysis, relapse	1	..	1	..	..	Low	......	......	Severe	Death	Antipyrin, whiskey and spg.
" lysis	1	..	..	1	..	Low	......	Albuminuria	Mild	Cured	Quinin, sponging
emittent, lysis	..	..	..	..	..	......	......	......	Mild	"	Quinin
ont., irregular; lysis	..	..	..	..	..	Active	......	......	Severe	Death	Whiskey, bismuth, sponge
ow, irregular; lysis	..	..	..	..	..	Low	......	......	Mild	Cured	Calomel and turpentine
ont., remit.; relapse	..	..	1	..	.	......	......	......	Mild	"	Quinin and sponge
" lysis	..	..	..	.	.	Active	......	......	Severe	"	Quinin, sponge
" high; crisis	1	..	..	..	.	Low	......	......	Severe	"	Ammon. carb., whiskey, spg.
" relapse	..	..	1	1	..	Low	......	Nephritis	Severe	"	Diuretics and sponging
" lysis	1	..	1	..	..	Restless	......	......	Mild	"	Quinin, sponge
" "	..	..	1	..	..	......	......	......	Mild	"	Quinin, H_2SO_4, arom.
rregular, septic; lysis	..	3	1	1	1	Maniacal	......	......	Severe	Death	Opium, lead, ice, caustics,
ontinued, typical "	..	..	1	1	..	Low	......	......	Mild	Cured	Quinin, spg [H_2SO_4, spg.
" " "	..	..	..	1	..	......	......	Albuminuria	Mild	"	Quinin, sponge
" " "	..	..	1	1	..	......	......	......	Mild	"	Quinin, sponge
" " "	..	..	..	..	..	......	......	......	Mild	"	Quinin, calomel and tubs
emittent, lysis	..	..	..	..	..	Stupor	......	......	Mod. severe	"	Whiskey, quinin, sponge
ont., 2 relapses; lysis	..	..	1	..	..	Active	......	......	Severe	"	Sponge, tubs and quinin
" high	..	1	..	1	..	Wild	1	......	Severe	Death	Ergot, phenacetin, sponge
" irregular; lysis	..	..	1	..	..	......	......	......	Severe	Cured	Phenacetin and whiskey
" typical "	..	..	..	..	..	......	......	......	Mild	"	Diet and sponge
" remittent "	1	..	..	..	..	......	......	......	Sudoral	"	H_2SO_4, arom. and sponge
" recrudes. "	1	..	..	..	..	......	......	......	Mod. severe	"	Whiskey and sponge
" relapse "	..	..	..	..	..	......	......	......	Mod. severe	"	Quinin and tubs
" post-typh rise; lysis	..	..	1	..	..	......	......	Albuminuria	Mild	"	Salol, sponge
" irregular	..	1	..	..	..	Low	......	......	Severe	Death	H_2SO_4, arom., Pb., sponge
" septic; lysis	..	..	1	..	..	Low	......	......	Mod. severe	Cured	H_2SO_4, whiskey, caustics
" low "	..	..	..	..	..	......	......	......	Mild	"	H_2SO_4
rregular, low "	..	..	1	1	..	......	......	......	Mild	"	Quinin .
" remittent; crisis	..	..	..	..	..	......	......	......	Mild	"	Salol and whiskey
" high "	..	1	..	..	..	Active	......	......	Severe	"	Salol and liq., ammon. acet.
ont., recrudes.; lysis	..	..	..	..	..	......	......	......	Mild	"	H_2SO_4, arom., ammon. carb.
" intermittent "	..	..	..	..	..	Low (Carpholo)	......	......	Mod. severe	"	Salol, calisaya, sponge
" typical "	..	..	..	..	..	......	......	Albuminuria	Mod. severe	"	Salol, H_2SO_4 and quinin
" " "	..	..	..	..	..	Low	......	......	Severe	"	Salol, quinin, surgical
" low; crisis	..	..	1	1	..	......	......	......	Mild	"	Whiskey, sponge
" typical; lysis	..	..	..	..	..	......	......	......	Mild	"	Whiskey, tubs
rregular, atypical	1	..	..	..	..	......	......	......	Mild	"	H_2SO_4, arom., quinin
ont.; lysis	..	..	1	..	1	Low	......	......	Mild	"	Salol, quinin
" irregular; lysis		..	..	..	..	Active	......	......	Mild	"	Salol, calisaya, sponge
" typical "	..	..	1	..	..	Low	......	......	Mod. severe	"	Salol, H_2SO_4
" " "	..	..	.	..	..	......	......	Albuminuria	Mod. severe	Death	Turpentine, H_2SO_4, digitalis,
" " "	1	..	..	..	..	Low	......	......	Mod. severe	Cured	H_2SO_4 [salicyl. acid
" " "	..	..	1	1	..	......	......	......	Severe	"	Tubs
" " "	..	..	1	1	1	......	......	......	Mod. severe	"	H_2SO_4, whiskey, tubs
" intermit "	..	..	1	..	..	......	......	......	Mild	"	Quinin, bismuth, whiskey
" typical "	..	..	..	1	..	......	......	......	Mild	"	Quinin, H_2SO_4, sponge
" " "	..	..	1	1	..	......	......	......	Mild	"	Quinin
" relapse "	1	..	1	..	..	......	......	Albuminuria	Mod. severe	"	Quinin, whiskey, tub
" septic "	1	..	1	1	..	Active	......	......	Severe	"	Guaiacol, H_2SO_4, calisaya
rregular, low, intermit.	..	..	..	..	..	......	......	......	Mild	"	Quinin, calomel, sponge
ont., typical; lysis	..	..	..	1	..	......	......	......	Mild	"	Quinin, sponge
" " "	..	..	1	..	..	......	......	......	Mild	"	Quinin, sponge
" remittent "	..	..	..	..	..	......	......	......	Severe	"	Whiskey, sponge

1 = yes.

Rose Spots	Sex	Age	Date of Admission	Widal and Diazo	Infection	Necropsy	Perforation	Complications	Onset
..	M	11	Sept., '94	......	....	...	..	Adenitis, Post-cervical	Insidious
..	F	5	Oct., '94	......	...	...	..	Phlebitis	Arthritis
..	M	4	Feb., '94	......	...	...	.	Meningitis	Insidious
..	F	7	Dec., '95	...	...	...	..	Post-typhoid, Insanity	Prostration
..	M	6	Feb., '95	......	...	...	..	...	Insidious
1	M	7	Oct., '95	......	...	Diagnosis correct: Pleurisy	..	Chr. Rhinitis, Pulmonary	"
..	F	8	Oct., '95	......	...	...	..	Cyanosis	"
..	M	11	Sept., '95	......	...	...	..	Cardiac	"
1	F	10	Sept., '95	......	...	...	..	Pharyngitis, Adenitis, Synovitis	Sudden
1	M	5	Aug., '95	......	...	...	..	Pulmonary	Insidious
..	M	11	Aug., '95	.. ...	...	...	..	Intestinal	"
..	F	7	Aug., '95	......	...	...	..	...	"
..	M	4	Sept., '95	......	....	Diagnosis correct: Peritonitis. Perforation last inch Ileum	1	Intestinal	Diarrhea
..	M	6	Aug., '95	......	Water	Diag. correct: Perf. lower 6-in. Il.	1	Intestinal	Insidious
..	M	10	April, '96	......	...	...	..	Bronchitis	"
..	M	9	March, '96	.. ...	...	...		"	"
1	F	2	Oct., '96	.	...	...		Otitis Media, Abscesses	Sudden
..	M	3	Aug., '96	......	...	...		Bronchitis	Cough
1	F	10	Sept., '96	......	...	...	..	...	Gastrointestinal
1	M	6	Oct., '96	......	...	...	..	Nervous	Insidious
..	F	11	Oct., '96	1	...	...	..	Renal	"
..	F	12	Sept., '96	......	Contagium	...	..	Neuralgia	Chills, Acute
1	F	5	Dec., '98	1	...	...	..	Adenitis	Insidious
..	M	7	Dec., '98	1	...	...	..	Sweats, sequel Tuberculosis	Sudden, Nervous
1	M	6	Sept., '98	1	....	...	..	...	Insidious
..	F	9	Sept., '98	1	...	Diag. correct: Cerebral Congest.	..	Syncope	"
..	M	2	Oct., '98	1	...	...	..	Pulmonary	"
1	M	11	Oct., '98	1	...	...	..	Renal	"
..	M	11	Nov., '98	1	....	...	..	Cardiac	"
..	M	10	July, '98	.	...	...	..	Insanity	"
1	F	6	July, '98	1	...	...	..	...	"
1	F	6	Sept., '98	1	....	...	..	Sequel Diphtheria	"
1	F	9	June, '98	1	Water	...	..	Tonsillitis, Vaginitis	"
..	F	9	June, '98	.. ..	...	...	..	...	Sudden, Fever
..	M	10	June, '98	1	...	...	..	Tonsillitis	Insidious
..	M	11	Aug., '98	......	...	...	..	...	"
..	M	6	July, '98	......	....	...	..	...	Acute
..	F	10	July, '98	1	...	...	..	Nephritis, Vaginitis, Meteorism	Insidious
..	F	4	Aug., '99	1	...	...	..	Sequel Scarlet Fever	Erythema
1	F	11	Oct., '99	1	Contagium	...	..	...	Chills
1	F	10	Nov., '99	1	.. ..	...	..	Nervous	Insidious
1	M	7	Nov., '99	1	....	...	..	...	"
..	M	8	April, '99	1	Contagium	...	..	...	Cough
..	M	11	May, '99	1	. ...	...	..	Nervous, Arthritis	Insidious
1	F	10	July, '99	1	...	...	..	Tonsillitis	Sore Throat
..	M	11	July, '99	...	...	...	..	Neuritis	Insidious
..	M	9	Aug., '99	1	...	...	..	Post-typhoid Mania	Gastrointestinal
..	M	5	July, '99	......	...	...	..	Bronchitis	Insidious
..	M	7	Aug., '99	1	...	...	..	...	"
1	F	7	Aug., '99	1	....	...	..	Cerebral Irritation	Cerebral
..	M	6	July, '99	.....	....	...	..	...	Insidious
..	F	10	Aug., '99	1	. ....	...	..	Eruption	Sweats
..	M	7	Sept., '99	......	Contagium	...	..	Ecthyma	Acute
..	M	7	Sept., '99	......	...	...	..	Mania	...
1	F	3	Aug., '99	1	...	...	..	Retention Urine	Insidious
1	F	8	Aug., '99	1	...	...	..	Meteorism	Insomnia
..	F	10	Nov., 1900	1	....	...	..	...	Languor
..	M	7	Feb., '00	1 d*	...	...	..	...	Sudden
1	M	5	Sept., '00	1 d	...	...	..	Nephritis	Insidious
1	M	6	Aug., '00	1 d	...	...	..	...	"
..	M	3	July, '00	1	.. ..	...	..	Meteorism	Vomit, Acute
..	F	7	May, '00	1	...	...	..	...	Delirium
..	M	5	Sept., '00	1	....	Diagnosis correct; Ulceration	..	Cardiac	Headache, Drowsy
..	M	8	Nov., '00	1 d	... .	...	..	Cerebral Irritation	Insidious
..	M	11	Nov., '00	1 d	...	...	..	Otitis Media	"
..	F	9	Oct., '00	1	...	...	..	Gingivitis, Vulvitis	Cerebral, Acute
..	M	10	Sept., '00	1	...	...	..	...	Insidious
..	M	7	Sept., '00	1 d	...	...	..	Tympanites	Acute

1 = yes. * "d" indicates "Diazo reaction positive."

Fever-type	Chills	Hemorrhage	Epistaxis	Spleen Enlarged	Pneumonia	Delirium	Convulsions	Kidneys	Variety	Result	Treatment
ont., typical "	..	..	..	..	..	....	....	....	Mod. severe	Cured	Guaiacol, ammon. carbonate
" septic "	..	..	..	..	..	....	....	....	Mod. severe	"	Surgical, guaiacol
" recrudes. "	..	..	1	..	1	Active	....	....	Severe	"	Ammon. carb., whiskey, spg.
" low "	..	..	..	..	..	Maniacal	....	....	Severe	"	Kalium bromid, whiskey, spg.
" " "	..	..	1	..	..	....	....	....	Mild	"	Calomel, quinin
" high (108°) "	..	..	1	1	1	Low, muttering	....	....	Severe	Death	Salol, strychnin, sponge
" " "	..	..	..	..	..	Low	....	....	Severe	Cured	Digitalis, whiskey, sponge
" typical "	..	..	..	..	..	....	....	....	Mild	"	Hydrochloric acid dil.
" irregular "	..	..	..	..		Low	....	....	Severe	"	Whiskey and tub
" typical "	1	..	..	..	1	Low	....	....	Mod. severe	"	Guaiacol, quinin
" " "	1	1	..	..	..	....	....	....	Mild	"	Hydrochloric acid
" " crisis	..	1		..	..	....	....	....	Mod. severe	"	Lead, bismuth
" high "	..	1	..	..	..	Stupor	....	....	Severe	Death	Opium, salol
" " "	..	..	1	1	..	Low	....	Albuminuria	Severe	"	Opium and lead
" typical; lysis	..	..	..	..	..	Low	....	....	Mild	Cured	Whiskey, sponge
" mild "	..	..	..	..	..	Low	....	....	Mild	"	Salol, bismuth, ammonia
" septic "	1	..	1	..	..	Low	....	....	Severe	"	Hyoscyamus, guaiacol, whiskey, surgical
" typical "	..	..	..	..	..	....	....	....	Mild	"	Quinin, whiskey, sponge
" " "	1	..	..	..	..	....	....	....	Mild	"	Quinin, liq., ammon., acet.
"post-typh.rise; lysis	..	..	..	1	..	Tremors	....	....	Mod. severe	"	Calomel and sponge
" relapse; lysis	..	..	..	..	..	....	....	Nephritis	Mod. severe	"	Whiskey and sponge
"post-typh.rise; lysis	1	..	..	1	..	....	....	....	Mild	"	Phenacetin and quinin
" remittent; lysis	..	..	..	1	..	....	....	....	Mild	"	Phenacetin .
" " "	..	..	1	..	..	Low	....	....	Severe	"	Strychnin, salol, sponge
" " "	..	..	..	1	..	....	....	....	Mild	"	Quinin
" irregular "	1	..	..	..	..	Low	....	....	Severe	Death	Salol, whiskey, sponge
"remit, crisis, recrud	..	..	1	..	1	....	....	Albuminuria	Severe	Cured	Hyoscyamus, amm., whiskey, [spg.
" typical; lysis	..	..	..	1	..	Low	....	"	Mod. severe	"	Stimulants, sponge
" irreg. (high); lysis	1	..	1	..	..	....	....	....	Mild	"	Salol, strychnin, sponge
" relapse; lysis	1	..	1	..	..	Low	....	Albuminuria	Mod. severe	"	Whiskey, strychnin, bromid
" typical "	..	..	1	1	..	Low	....	....	Mod. severe	"	Salol and sponge
" " "	1	.	1	1	..	....	....	....	Mild	"	Salol and sponge
" intermittent; lysis	..	..	..	..	..	....	....	....	Mild	"	Quinin, whiskey
ow, irregular; crisis	..	..	1	..	..	....	....	....	Mild	"	Quinin
nt. " lysis	..	..	1	1	..	Low	....	....	Mod. severe	"	Quinin, sponge
" remittent "	1	..	1	..	..	....	....	....	Mod. severe	Death	Whiskey and sponge
" prolonged "	..	..	1	.	..	Low	....	....	Mild	Cured	Hydrotherapy
" intermittent "	..	..	..	1	..	Low	....	Nephritis	Mod. severe	"	Salol, sponge and potash
" relapse "	..	..	..	1	..	Active	....	....	Severe	"	Regular
" intermittent "	1	..	1	..	..	Low	....	....	Sudoral	"	"
" high "	..	..	..	1	..	....	....	....	Mild	"	"
" " "	..	..	.	.	..	....	....	....	Mild	"	"
" typical "	..	..	..	1	..	....	....	....	Mild	"	"
" " "	..	..	1	1	..	Low	....	....	Mild	"	"
termit,, relapse; lysis	1	..	..	..	..	....	....	....	Mod. severe	"	"
w, remittent; lysis	1	..	..	..	..	....	....	....	Mild	"	"
nt., intermittent "	..	..	..	..	..	Delusions	....	....	Severe	"	"
' remit., relapse "	..	..	1	1	..	Low	1	....	Severe	"	"
' typical "	..	..	..	1	..	Low	....	....	Mild	"	"
' " "	..	..	1	1	..	Coma, vig. carph	1	Nephritis	Severe	Death	"
' remittent "	..	..	1	.	..	Low	....	"	Mild	Cured	"
' irregular "	..	..	..	..	..	....	....	....	Sudoral	"	"
' remittent "	..	..	..	..	..	Wild	....	....	Severe	"	"
' " "	..	..	1	1	..	....	....	....	Mild	"	"
' " "	..	..	1	1	..	....	....	Albuminuria	Mod. severe	"	"
' high "	..	..	..	..	..	Hysteria, delus.	....	....	Severe	"	"
' intermittent "	..	..	1	1	..	....	....	Albuminuria	Mild	"	"
' remittent "	1	..	..	..	..	Low	....	....	Mild	"	"
' " "	..	..	..	..	..	Comatose	....	Nephritis	Severe	"	"
' " "	..	..	1	1	..	....	....	....	Mod. severe	"	"
' " "	..	..	1	..		Active	....	....	Mod. severe	"	"
mittent; lysis	..	..	..	..	..	Wild	....	....	Severe	"	"
nt.; crisis	1	1	1	1	..	Low	....	Albuminuria	Severe	Death	" chlor. of sod. solution
" remittent; lysis	..	..	..	..	..	Active	....	"	Mod. severe	Cured	" Lumbar puncture neg.
" " "	..	..	..	1	..	Carphologia	....	....	Mild	"	"
" relapse "	.	..	..	1	..	Coma	....	....	Mod. severe	"	"
" " "	..	..	..	..	..	Stupor	....	....	Mod. severe	"	"
" remittent "	..	..	1	1	..	....	....	....	Mild	"	"

1 = yes.

Rose Spots	Sex	Age	Date of Admission	Widal and Diazo	Infection	Necropsy	Perforation	Complications	Onset
..	F	9	July, '00	1			..		Gastric, Acute
..	F	6	Sept., '00	1			..		Insidious
1	F	9	Aug., '00	1			..	Nephritis	“
1	F	5	Aug., '00	1 d*			..	Cerebral, Tonsillitis	“
1	F	5	Aug., '00	1 d			..	Abscess, Asthenia	Delirium, Acute
1	M	11	May, '00	1 d			..		Insidious
1	M	10	Aug., '00	d			..	Gingivitis (severe)	“
1	M	8	Nov., '00	1 d			..	Otitis Media	“
..	F	9	June, '00	1 d			..	Petechial	“
..	F	11	Aug., '01	1 d			..		“
..	F	9	Aug., '01	1 d			..		“
..	F	9	Aug., '01	1 d			..		Cerebral
..	F	8	Aug., '01	1 d			..		Insidious
1	F	7	July, '01	1 d			..	Intestinal	“
..	F	10	July, '01	1 d	Contagium		..		“
..	F	6	July, '01	1 d			.		“
..	F	7	Aug., '01	......			..	Adenitis	“
..	F	11	Aug., '01	1 d			..		“
..	F	5	Aug., '01	1 d			..		“
..	F	5	Aug., '01	1 d	Contagium		..	Abscesses	“
..	F	6	Sept., '01	1 d			..		“
..	M	5	Aug., '01	1 d	Contagium		..	Abscess. Submax	“
1	F	4½	Nov. 4, '01	1			..	Enuresis, Malaria	“
..	F	11	Sept. 16, '01	1			..	Tympanites	“
..	F	2½	Aug. 3, '01	......			..		“
1	F	5	Aug. 10, '01	1			..	Constipation	“
..	F	11	Aug. 21, '01	1 d			..		“
..	F	5	Mar. 5, '02	1			..		“
1	M	11	Aug. 11, '01	1 d			..	Constipation	“
..	M	9	Mar. 21, '02	1			..	“	“
..	M	7	Nov. 25, '01	......		Not allowed	..	Edema feet	“
1	F	5	Sept. 2, '01	1			..		“
1	M	8	Aug. 12, '01	1 d			..	Bronchitis	“
1	M	4	Feb. 12, '02	1		Not allowed	..	Insanity (post-typhoid)	“
1	F	11	Aug. 8, '01	1			..		“
1	F	3	Sept. 12, '01	1 d			..	Bronchitis	“
1	M	9	Aug. 28, '01	1			..		“
..	M	11	Aug. 28, '01	1			..	Abscesses	“
1	F	10	Sept. 15, '01	1		Diagnosis correct	..		Sudden
1	M	8	Mar. 31, '02	1			..		Insidious
..	F	5	Aug. 10, '02	1	Water		..		“
1	F	8	Nov. 4, '01	1			..	Mastoid Abscess, Mania	“
1	M	4	Oct. 22, '01	1 d			..	Bronchitis	“
1	F	8	Jan. 22, '02	1 d			..		“
1	M	11	Feb. 3, '03	1 d			..		“
..	M	8	Jun. 23, '03	1 d			..		“
..	F	9	July 7, '03	d	Water		..	Bronchitis	“
..	M	9	Sept. 8, '03	1 d			..		“
..	M	8	Sept. 11, '02	1			..	Tympanites	“
..	F	6	Aug. 4, '02	1		Diagnosis correct	..		“
..	M	8	Nov. 11, '02	1 d			..	Tympanites	“
1	M	9	Nov. 22, '02	1			..	Diarrhea	“
1	M	10	Jan. 21, '03	1			..		Sudden
1	F	4	Aug. 10, '02	1	Water		..		Insidious
1	F	5	Aug. 10, '02	1	“		..		“
..	M	7	Aug. 11, '02	1			..	Tympanites	“
..	M	11	Sept. 22, '02	1 d	Water		.		“
..	M	2	Jun. 18, '02	1 d	“				“
..	M	6	Sept. 22, '02	1 d	“		.	Abscesses	“
1	F	2	Aug. 11, '02	1			..		“
1	F	4	Jan. 2, '03	1			..		“
1	F	6	Jan. 12, '03	1			..		“
..	F	10	Oct. 28, '02	1 d		Diagnosis correct	1	Parotid Abscess	“
1	F	8	Jun. 22, '03	1 d			..		“
..	M	11	Aug. 12, '02	1			..		“
1	F	9	Sept. 26, '02	1	Water	Diagnosis correct	..	Diarrhea	“
..	F	5	Nov. 11, '02	1			.		“

1 = yes. * “d” indicates “Diazo reaction positive.”

Fever-type	Chills	Hemorrhage	Epistaxis	Spleen Enlarged	Pneumonia	Delirium	Convulsions	Kidneys	Variety	Result	Treatment
nt., recrudes.; lysis	..	..	1	1	..	………	………	………	Mild	Cured	Regular
" remittent "	..	..	1	..	..	………	………	………	Mild	"	"
" " (high) "	..	..	1	1	..	………	………	Nephritis	Mod. severe	"	"
" recrudescence, relapse (106°); lysis	..	..	..	1	..	Maniacal	………	………	Severe	"	"
nt., remittent "	..	..	1	1	..	………	………	Albuminuria	Severe	Death	" chlor. of sod. solution
" " "	..	..	..	1	..	Active	………	………	Mod. severe	Cured	"
" " "	..	..	1	..	..	………	………	………	Mod. severe	"	"
" intermittent "	..	1	..	..	..	Wild	………	………	Severe	"	" chlor. of sod. solution
" remittent "	..	..	1	1	..	………	………	………	Mild	"	"
" " "	..	..	1	..	..	………	………	………	Mild	"	"
egular (low); lysis	..	..	..	..	..	………	………	………	Mild	"	"
mittent; lysis	..	..	..	..	..	Low	………	………	Mild	"	"
nt., relapse: lysis	..	..	1	1	..	………	………	………	Mild	"	"
egular; lysis	..	..	..	..	..	………	………	………	Mild	"	"
nt., remittent; lysis	..	..	1	..	..	………	………	………	Mild	"	"
" " "	..	..	1	..	..	………	………	………	Mod. severe	"	"
egular; lysis	..	..	..	..	..	………	………	………	Mild	"	"
nt., relapse; lysis	..	..	1	..	..	………	………	………	Mild	"	"
mittent; lysis	..	..	..	1	..	………	………	………	Mild	"	"
nt., relapse: lysis	..	..	1	..	..	………	………	………	Mod. severe	"	"
" lysis	..	..		..	..	………	………	………	Mod. severe	"	"
" (high), remittent	..	..	..	.	..	Active	………	Albuminuria	Severe	……	" surgical
" lysis	1	..	1	..	.	Low	………	………	Severe	Cured	"
" "	..	..	..	..	..	Active	………	………	Mod. severe	"	"
termittent	..	..		..	..	Low	………	………	Mod. severe	"	"
nt., recrudescence	1	..	1	..	..	Low	………	………	Severe	"	"
" lysis	..	..	1	..	..	Active	………	………	Severe	"	"
ntinuous	..	..	..	..	..	………	………	………	Mild	"	"
termittent	..	..	1	..	..	Low	………	………	Mod. severe	"	"
ntinuous; lysis	..	..	1	..		Low	………	………	Mod. severe	"	"
" "	..	..	1	..	..	Low	………	………	Severe	Death	Salol, whiskey, sponging
" "	..	..	1	..	..	Low	………	………	Mod. severe	Cured	Whiskey, strych., HCl dil.
" "	..	..	..	..	..	Low	………	………	Mod. severe	"	Regular
" "	..	..	1	..	..	Active	………	………	Severe	Death	" tr. hyoscyamus
" recrudescence	..	..	1	..	..	Low	………	………	Mod. severe	Cured	"
" lysis	..	..	..	..	..	Low	………	………	Mod. severe	"	"
" (high)	..	..	1	..	..	Low	………	………	Mod. severe	"	"
" lysis	..	..	1	..	..	Mild	………	………	Mild	"	" surgical
" high	..	I	..	..	..	Severe	………	………	Severe	Death	Strychnin, whiskey, hypodermoclysis
" lysis	..	1	1	..	..	Low	………	………	Mod. severe	Cured	Regular
termittent	..	..	..	1	..	Low	………	………	Mild	"	"
ntinuous; lysis	..	..	1	..	..	Active	1	………	Severe	"	Stimulation, olive oil inunctions
" relapse	1	..	..	..	..	Active	………	………	Severe	"	Regular
" lysis	1	..	1	..	..	Low	1	………	Mild	"	"
" "	..	..	..	..	..	Low	………	………	Mild	"	"
" "	..	..	..	..	..	Low	………	………	Mod. severe	"	"
" "	1	..	1	..	..	Active	………	………	Mod. severe	"	" tr. hyoscyamus
" "	..	..	1	..	..	Low	………	………	Mild	"	"
" "	1	..	..	..	..	Low	………	………	Mild	"	"
" high	1	1	1	1	..	Active	………	………	Severe	Death	Strychnin, whiskey, hypodermoclysis
mittent, continuous	..	..	..	1	..	Active	………	………	Severe	Cured	Regular
" "	..	..	1	..	..	Low	………	………	Mild	"	"
ntinuous; lysis	..	..	1	1	..	Low	………	………	Mod. severe	"	"
" "	1	..	1	..	..	Low	………	………	Mod. severe	"	"
" "	..	..	1	..	..	Low	………	………	Mod. severe	"	"
" "	1	..	1	..	..	Low	………	………	Mod. severe	"	"
" "	..	..	..	1	..	Low	………	………	Mod. severe	"	"
" "	..	..	..	..	..	Low	………	………	Mild	"	"
" with relapses	1	1	..	1	..	Active	………	Albuminuria	Severe	"	" hypodermoclysis and tr. hyoscyamus
"	..	..	..	..	..	Low	………	………	Mild	"	Regular
" lysis	1	.	..	.	..	Low	………	………	Mild	"	"
" "	..	..	..	1	.	Low	………	………	Mild	"	"
" high	..	..	..	1	.	Active	………	………	Severe	Death	Nitroglycerin, whiskey, hypodermo., dig., strych. sulph., paregoric
" lysis	..	..	1	..	..	Low	………	………	Mild	Cured	Regular
mittent, continuous	..	..	1	1	..	Low	………	………	Mild	"	"
ntinuous, high	..	1	1	.	..	Active	………	………	Severe	Death	" hypodermoclysis
" lysis	..	..	1	1	..	Low	………	………	Severe	Cured	"

1 = yes.

Rose Spots	Sex	Age	Date of Admission	Widal and Diazo	Infection	Necropsy	Perforation	Complications	Onset
..	F	2	Dec. 28, '02	1	...	...	..	Diarrhea	Insidious
1	M	10	Dec. 29, '02	1	...	...	..	...	"
1	F	3	Jan. 22, '03	1	...	...	.	...	"
1	F	6	Jan. 22, '03	1	Water	...		...	"
..	F	4	Jan. 22, '03	......	...	...	..	Bronchitis	"
..	M	3	July 27, '02	1	...	...	..	Constipation	Sudden
..	M	11	Sept. 11, '02	1 d	...	...		...	Insidious
..	M	8	Jan. 28, '02	1	...	...	..	...	"
1	F	6	July 14, '02	1 d	...	...	..	...	"
..	F	9	July 18, '02	1	...	Diagnosis correct	1	...	"
..	F	6	Nov. 29, '02	1	...	...	..	...	"
..	F	10	Sept. 23, '02	1	Water	...	.	Parotitis	"
1	M	1⅓	Jan. 2, '03	......	...	...	..	...	"
..	M	2	June 6, '03	1 d	...	...	..	...	"
..	M	9	Nov. 20, '02	1	...	...	..	...	"
..	F	8	Jan. 22, '03	1 d	...	...	..	...	"
..	M	8	Sept. 30, '02	1	...	...	..	...	"
..	F	2½	Sept. 30, '02	......	...	...	.	Pertussis	"
..	F	6	Sept. 11, '02	1	Water	Diag. correct: Pul. tuberculosis	..	...	"
..	F	7	Aug. 13, '02	1	...	...	.	Vaginitis	"
1	F	11	Aug 4, '02	1	...	...	..	...	"
1	F	10	Sept. 1, '02	......	...	...	..	...	"
..	F	11	Aug. 5, '02	1 d	...	Not allowed	1	Tympanites	"
..	F	8	June 4, '02	1 d	...	...	.	...	"
1	M	11	Nov. 19, '03	1 d	...	...	..	...	"
..	F	10	July 24, '02	1	Water	...	..	Tympanites	"
..	F	8	Aug. 22, '02	1 d	...	...	..	Diarrhea	"
1	M	7	Dec. 6, '02	......	...	...	..	...	"
..	M	11	Feb. 8, '03	1	...	...	..	Diarrhea	"
..	F	7	Sept. 28, '02	1	...	...	..	...	"
..	M	10	Aug. 22, '02	1 d	...	...	..	Tympanites	Sudden
..	F	11	Sept. 11, '02	d*	...	...	.	...	Insidious
..	M	8	June 4, '02	1 d	...	...	..	Diarrhea	"
..	M	2	Dec. 4, '02	......	...	...	..	...	"
..	F	7	July 6, '02	1 d	...	...	..	...	"
..	M	8	Sept. 4, '02	1 d	...	...	..	Tympanites	"
..	F	6	Nov. 5, '02	1	...	Diagnosis correct	1	Mitral regurgitation	"
..	M	11	July 29, '02	......	Water	...	..	...	"
..	F	9	Nov. 21, '02	1 d	...	...	..	...	Sudden
..	M	9	Aug. 16, '03	1 d	Water	...	..	...	"
..	M	7	July 7, '03	1 d	...	...	..	...	Insidious
..	F	9	July 6, '03	1 d	...	...		...	"
..	F	5	Aug. 12, '03	1	...	Diag. correct: Pul. tuberculosis	.	...	"
1	F	9	Jun. 19, '03	1 d	...	...	..	...	"
..	F	10	July 10, '03	d	...	...	..	...	"
..	F	3	Jun. 29, '03	1 d	...	Diag. correct: Pul. tuberculosis	..	Diarrhea	"
1	M	12	July 22, '03	1 d	...	...		...	"
..	M	12	Sept. 30, '03	1	...	...	.	Tympanites	"
..	M	6	July 16, '03	1 d	...	...	.	...	"
..	F	7	Jun. 26, '03	1 d	...	...	.	...	"
..	M	11	July 19, '03	1 d	Water	...	.	...	"
..	M	2	July 9, '03	1	...	...	..	...	"
1	F	10	Sept. 21, '03	1	...	...	..	Diarrhea	"
..	F	9	July 7, '03	1 d	...	...	.	...	"
..	F	7	July 10, '03	1 d	...	...	..	...	"
.	F	3	Aug. 21, '03	1 d	...	Diagnosis correct	..	Diarrhea	Sudden
1	M	3	Aug. 7, '03	1 d	...	...	.	"	Insidious
1	M	12	July 22, '03	1 d	...	...	.	"	"
..	F	6	July 22, '03	1	...	...	..	...	"
1	M	8	July 1, '03	1	...	...	.	...	"
..	M	4	July 28, '03	1	...	...	.	...	"
..	M	12	Sept. 15, '03	1 d	Contagium	Diagnosis confirmed	..	Diarrhea	"
..	F	8	Sept. 8, '03	1 d	...	Diag. confirmed: Pul. tubercul.	..	"	"
..	F	7	July 7, '03	1	...	...		...	"
1	F	11	Sept. 29, '03	1 d	...	...	..	Diarrhea	"
1	F	3	Sept. 25, '03	1 d†	Water	...	..	Tympanites	"
..	M	10	Sept. 30, '03	1 d	...	...	..	...	"

1 = yes.

* Gives history of previous attack six years ago.

† This child was treated in hospital last year for enteric fever, giving Widal reaction and typical temperature chart.

Fever-type	Chills	Hemorrhage	Epistaxis	Spleen Enlarged	Pneumonia	Delirium	Convulsions	Kidneys	Variety	Result	Treatment
Continuous; lysis	.	..	1	1	..	Low	....	....	Mild	Cured	Regular
" relapse	1	..	1	1	..	Low	....	....	Severe	"	"
" high	..	1	1	1	..	Active	....	....	Severe	"	" hypodermoclysis
" relapse	..	1	1		..	Active	....	....	Severe	"	"
"	..	..	1	1	..	Low	....	....	Mild	"	"
" crisis	.	..	1	1	..	Low	....	....	Mild	"	"
"	..	..	1	1	..	Active	....	....	Mild	"	"
"	..		1	..	.	Active	....	....	Mod. severe	"	"
" relapse	1	..		1	..	Low	....	....	Mild	"	"
" high	..	..	..	..	..	Active	....	....	Severe	Death	" hypodermoclysis
" lysis	..		1	..	..	Low	....	....	Mild	Cured	"
" "	..	1	1	..	..	Active	....	....	Severe	"	" hypodermoclysis
Intermittent "	.	..	..	1	..	....	....	....	Mild	"	"
Continuous	..	..	..	1	..	....	....	....	Mild	"	"
" high	..		1	1	..	Active	....	....	Severe	"	"
Cont., recrudescence	..	..	..	1	..	....	....	....	Mild	"	"
Remittent	..	..	1	1	..	Low	....	....	Mild	"	"
Continuous	..	..	..	..	1	Low	....	....	Severe	"	Strychnin, whiskey
"	..	1	1	..	.	Active	....	....	Severe	Death	Hypodermoclysis, regular
"	..	..	1	1	..	Active	....	....	Severe	Cured	Sponging, stimulants
"	..	..	..	..	..	Low	....	....	Mild	"	Regular
" high	1	..	..	..	..	Low	....	....	Severe	"	"
" "	..	..	..	..	..	Active	....	....	Severe	Death	Hypodermoclysis, stimulants
" "	..	..	1	..	..	Active	....	....	Mod. severe	Cured	Regular
" lysis	..	..	1	1	..	Low	....	....	Mild	"	"
" "	..	..	..	..	..	Active	1	....	Severe	"	Sponging, stimulation
" "	..	..	1	..	..	Low	....	....	Mild	"	Regular
" "	..	..	..	..	..	Low	....	....	Mild	"	"
" "	..	..	1	..	..	Low	....	....	Mild	"	"
" "	..	..	1	..	..	....	....	....	Mild	"	"
Remittent	..	..	1	1	..	Active	....	....	Mild	"	"
Continued; lysis	..	..	1	..	..	Active	....	....	Severe	"	"
" "	..	1	1	..	..	Low	....	....	Mild	"	" stimulation
" high	..	..	..	1	..	Low	....	....	Mild	"	"
Remittent	..	..	1	1	..	Low	....	....	Mild	"	"
Continuous; lysis	..	..	..	..	..	Low	....	....	Mild	"	"
" "	1	1	1	1	..	Low	....	Albuminuria	Severe	Death	Hypodermoclysis, regular
" "	1	1	..	..	..	Active	....	....	Severe	Cured	Salol, adrenalin, stimulants
" "	..	..	1	..	..	Low	....	....	Severe	"	Regular
" "	1	..	..	1	..	Low	....	....	Severe	"	"
" "	..	..	..	..	..	Low	....	....	Mild	"	"
" "	..	..	1	..	..	Low	....	....	Mild	"	"
" "	1	..	1	1	..	Active	....	....	Severe	Death	"
Remittent, relapses	..	..	1	..	..	Active	....	....	Severe	Cured	"
ontinuous; lysis	..	..	1	..	..	Low	....	....	Mild	"	"
ntermittent	..	..	1	..	..	Active	....	....	Severe	Death	"
ontinuous; lysis	..	..	1	..	..	Low	....	....	Mild	Cured	"
" "	..	..	1	..	..	Low	....	....	Mild	"	"
ntermittent "	..	..	1	..	..	Low	....	....	Mild	"	Sponging, quinin
ontinuous "	1	..	1	1	..	Low	....	....	Mild	"	Regular
" "	1	..	1	..	..	Low	....	....	Mild	"	"
ntermittent "	..	..	..	1	..	Low	....	....	Mild	"	Salol andwhiskey
ontinuous; high	1	..	1	..	..	Active	....	....	Severe	"	Paregoric, salol, whiskey
" lysis	..	..	1	..	..	Low	....	....	Mild	"	Regular
" "	..	..	1	1	..	Low	....	....	Mild, very	"	"
" high	..	1	1	1	..	Active	....	....	Severe	Death	Stim., salol, transfusion salt [solution
" lysis	1	..	..	..	..	Active	....	....	Severe	Cured	Regular
"	..	..	1	..	..	Active	....	....	Mod. severe	"	Paregoric, salol, whiskey
emitttent	1	..	1	..		Low	....	....	Mod. severe	"	Regular
"	..	..	..	..	..	Low	....	....	Mild	"	"
"	1	..	1	..	..	Low	....	....	Mild	"	Salol, quinin
ontinuous, high	..	..	1	1	..	Active	....	Albuminuria	Severe	Death	Whiskey, strychnin, salol
emittent	1	..	..	..	..	Active	....	....	Severe	"	" " "
ontinuous; lysis	..	..	..	..	..	Low	....	....	Mild	Cured	Regular
" "	..	..	..	..	..	Low	....	....	Mild	"	"
" "	..	..	1	1	..	Low	....	....	Severe	"	"
" "	1	..	..	..	..	Low	....	....	Mild	"	"

1 = yes.

Spleen.—The spleen was almost invariably enlarged in the fatal cases.

Nephritis was present in 4 cases.

The respiratory organs were affected in 7 cases, and the *circulatory* in 3, the *brain* in 3, *peritoneum* in 2, and *bladder* in 1.

MODE OF ONSET.—The disease was recorded as beginning insidiously in 230 cases, with diarrhea in 17, malaise in 14, chills in 49, suddenly in 17, delirium in 7, cough in 5, vomiting in 8, headache in 6, synovitis, epistaxis, stupor, nausea, and tonsillitis in 2 each, and with coryza, adenitis, arthritis, erythema, sweats and insomnia in one each; and the onset is not mentioned in 4 cases.

TEMPERATURE.—The course of the fever in children is usually of the remittent type, ranging from 103° F. to 105° F., and terminates by lysis. In this series the fever in 279 was remittent, in 24 intermittent, in 3 irregular, and in 2 atypical. The fever terminated by lysis in 241 and by crisis in 19. Post typhoidal rise was noted in 4 cases and was due to some error in management. There were 11 septic cases that were most pronounced, 4 of which died. Recrudescence was noted in a very small proportion of cases. Chills were recorded in 73 cases, 13 being at the outset.

ROSE-SPOTS are not as frequent in children as in adults. They were present in 100 cases only, but, as about 20 per cent. of the cases were negroes, the percentage is not accurate. Sudamina and miliaria are more common in the negro child.

SWEATS.—More or less sweating at the height of the fever is not uncommon, and in this series it was so profuse in 4 cases as to classify them under the sudoral variety.

Bed sores so seldom occur in children that it was not regarded as important to consider them. *Furunculosis* occurred twice.

CIRCULATORY SYSTEM.—The changes presented by the blood differ slightly from those found in the adult. There was 1 case of peri- and endocarditis and one of endocarditis. One case of phlebitis of the femoral vein was noted.

DIGESTIVE SYSTEM.—Five cases of ulceration of the mouth, one being gangrenous, were recorded. One case of esophagismus of exceeding interest was found. The boy was seven years of age and had a typical, moderately severe, attack of enteric fever. At the height of the disease there would be a tonic spasm of the esophagus in attempting to take drink or nourishment. This necessitated rectal feeding. After a long convalescence the case recovered.

Adenitis and parotitis occurred in 13 cases, most of which suppurated.

Pharyngeal symptoms were recorded in 8 cases.

Diarrhea was of infrequent occurrence after the first stage and when present was usually controlled by change of food.

Hemorrhage occurred in 31 cases (or 9 per cent.); 18 (or 58 per cent.) of which died. In 1 case there were three profuse hemorrhages and the child recovered, while in the 18 fatal cases but one hemorrhage was recorded.

Meteorism and *tympanites* were noted in 12 cases. In 6 the distension was unusually great and caused intense suffering.

Abdominal tenderness and gurgling were not as frequently observed as in the ordinary diarrheas of children. Indeed, I regard the gurgling and tenderness in the right iliac fossa as of little practical clinical value.

Perforation.—Of the 337 cases there were 11 (3.2 per cent.) with perforation, all of which were fatal. The diagnosis of perforation was made in every case within a few hours after its occurrence, but the child usually developed a peritonitis so quickly that surgical treatment was not deemed advisable in any case.

SPLEEN.—Enlargement of the spleen was recorded in 125 cases, but undoubtedly greater care in case-recording in the earlier decades would have increased the number.

EPISTAXIS was found in 169 (50.11 per cent.) cases, in many of which it was troublesome, and in one profuse and fatal.

PULMONARY SYSTEM.—*Bronchitis* was present in 20 cases in the earlier stages.

Pneumonia was noted in 12 cases, one of which proved fatal.

NERVOUS SYSTEM.—*Delirium.*—Children usually bear high temperatures much better than adults, but our statistics show a large percentage (63.53 per cent.) of nervous perturbations attributable to the pyrexia. The amount of fever formed no index of mental disturbances.

TABLE SHOWING TYPE OF DELIRIUM.

Mild	2
Low, muttering	137
Wild	59
Maniacal	8
Hysterical	1

Stupor	6
Coma	1

The distinction drawn between *wild* and *maniacal* delirium is arbitrary. Those classed as wild were thoroughly unaccountable and required restraint; while the maniacal had hallucinations, delusions and violent tendencies.

Convulsions.—In 10 cases convulsions appeared during the fastigium and not at the onset, as is the case in other infectious diseases in children. All these cases were fatal.

Neuritis.—Local neuritis during convalescence was observed in 3 cases, all of which recovered.

Hemiplegia with a fatal termination occurred once.

Posttyphoidal insanity was observed during convalescence in 6 cases, which had run a mild course without delirium. They were all due to faulty nutrition and promptly recovered with improvement in general health. I have reported 4 of these cases in the Transactions of the American Pediatric Society, Vol. VIII., p. 177.

Ear.—Otitis media supervened in 6 (1.8 per cent.) cases. Suppuration was profuse, but the disease only invaded the mastoid cells in 1 case. Deafness, sometimes profound, was frequently observed during the height of the disease, but always disappeared with the subsidence of the fever.

Renal System.—Retention of urine is not often met with in children, nor was it mentioned in these cases.

The diazo reaction was applied in 182 cases, with 73 (40.1 per cent.) positive. [The test is made when the child is admitted, and daily thereafter, but the positive reaction is often delayed as late as the third week.]

Albuminuria during the febrile stage occurred in 21 (6.25 per cent.) cases, but usually disappeared during convalescence. Acute nephritis was noted in 11 (3.2 per cent.) cases, 4 being fatal.

Postenteric Pyemia infrequently manifests itself by abscesses. At one time there were 3 cases of perirectal abscess in the hospital. No case of multiple abscesses was recorded, but a boil on the head, buttocks, thigh, or back was not uncommon.

Association with Other Diseases.—In an institution in which tubercular diseases prevail so extensively, it is somewhat surprising not to find acute miliary tuberculosis associated with, or directly following, an attack of enteric fever much earlier than

1901. Since then pulmonary tuberculosis has fatally attacked 4 convalescent typhoid patients. I found scarlatina, measles, malaria and pseudo membranous pharyngitis and laryngitis complicating the cases. Cancrum oris occurred in 4 cases, all being fatal.

VARIETIES OF FEVER.—Enteric fever in children presents such various modifications in its complex symptomatology that its classification as to degree depends entirely upon the observer. The course might be considered mild, and yet hemorrhage or perforation would cause an unexpected fatal termination; on the other hand, a case may be grave from the initial stage, and when least expected a rapid return to health take place. It has been our custom to classify as follows:—

Mild	157
Moderately severe	74
Severe	100
Irregular	2
*Sudoral	4
	225

Relapses.—There were 32 (9.4 per cent.) relapses, 4 cases having two each, with one death. A case of septic enteric died during the relapse. My experience has been that a relapse is of milder type and shorter duration than in the adult. The relapses here noted are true ones, but several spurious relapses have occurred which were of slight significance.

DIAGNOSIS.—There have been but few mistakes in diagnosis, the greatest difficulty being to differentiate enteric from estivo-autumnal malarial fever, when the blood examination was negative. However, observation and repeated blood examinations finally settled the question. The Widal test was applied in 70 cases and gave positive results in 58 (86.8 per cent.). This percentage is a trifle lower than the results of other observers and may be due to imperfect methods, which were unavoidable, before the establishment of a laboratory in the hospital.

MORTALITY.—There were forty-eight deaths, a rate of 14.2 per cent. Taking the periods separately, we see the greatest reduction in the last decade, which is unquestionably due to the hydrotherapeutic measures employed.

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* The term sudoral is used to define a condition in which there was profuse sweating during the fastigium.

1872-1882	26 cases,	8 deaths,	mortality	30.76	per cent.
1882-1891[1]	59 "	12 "	"	20.33	" "
1892-1903[2]	252 "	28 "	"	11.1	" "

ANALYSIS OF THE FATAL CASES.—There were 24 boys and 24 girls, whose ages ranged as follows:—2 years, 2; 3 years, 2; 4 years, 4; 5 years, 6; 6 years, 8; 7 years, 5; 8 years, 2; 9 years, 3; 10 years, 9; 11 years, 8; 12 years, 3; and 14 years, 2. One was infected by oysters, 2 by milk, 2 by contagion, and 4 by water.

The necropsy was made in 37 and revealed the characteristic local and parenchymatous lesions. In 4 cases which had died of pulmonary tuberculosis, the intestinal lesions had healed.

The onset was insidious in 30; by gastroenteric symptoms in 8; by angina in 1; by chills in 3, and suddenly in 6.

There were rose-spots in 9.

The fever was remittent in 29, intermittent in 5, atypical in 6, septic in 2, and not stated in 2.

Epistaxis was noted in 27, chills in 14, intestinal hemorrhage in 18, perforation in 11, nephritis in 8, convulsions in 8, and pneumonia in 5. The delirium was wild in 21, muttering in 18, maniacal in 1. In 24 the spleen was enlarged.

Such complications as bronchitis, pneumonia, peritonitis, cancrum oris, aphonia, gangrenous stomatitis, hemiplegia, pulmonary tuberculosis, mitral disease and endocarditis helped to swell the mortality.

The variety of the fever was severe in 43, moderately severe in 4, and mild in 1.

Thirty-five were treated by hydrotherapy; 3 by antiseptics; 1 by eliminative and antiseptic methods; 9 by antiperiodics, and 8 by antipyretics. Excessive diarrhea was treated 6 times; hemorrhage 6; nervousness 4, and cardiac weakness 12 times.

TREATMENT.—The general management of the cases was of the same character throughout, but the systematic methods of the trained nurse, which superseded the crude ones of the unskilled in the first decade, contributed much to the better results obtained in the second and third periods.

The diet which was uniformly liquid consisted of milk and animal broths, except in 2 cases where "pudding diet" was noted. I am not familiar with this last-named food for enteric cases, nor was I able to ascertain its full meaning, but I suspect that the patients for whom the pudding was ordered were in the convalescent stage.

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[1] It will be seen by the table that no cases are given in 1885. This omission, as well as that of 1897, was owing to the loss of records. In the annual report, 1885, 3 cases are reported, all of which recovered, which will reduce the mortality of the second decade to 19.35 per cent.

[2] In 1897 11 cases were treated and 1 died, which will reduce the mortality in the third decade to 9.27 per cent.

In the first decade there were twenty-six patients who were treated as follows:—

Cold sponging	5
Antiseptic treatment	1
Antiperiodic treatment	20

It will be seen that twenty received quinin. During this period Liebermeister's treatment was in vogue, and I can recall the large doses of quinin given, which had little effect upon the fever, but irritated the stomach and increased the nervous symptoms.

In the second decade fifty-nine patients received the following treatment:—

Cold sponging	23
Cold pack	1
Antiseptic treatment	5
Eliminative and antiseptic treatment	4
Nervous symptoms treated	32
Antiperiodic treatment	30
Antipyretic treatment	16

Daylight was beginning to dawn on the treatment, and the beneficial effects of reducing high temperature by external applications of cold were realized. This change of treatment was not well established when that pernicious class of drugs, the so-called antipyretics, was introduced. Antipyrin was administered in 16 cases, 4 of which died. I remember with what pride we gave the synthetical preparations to demonstrate their power of quickly reducing high temperatures. It was quite two years before we realized that, while the temperature was being so beautifully lowered, the necessity for stimulation increased.

Quinin was now given to 50.8 per cent. of the cases and undoubtedly played its part in augmenting the number requiring stimulation.

In the third decade the 252 cases were treated as follows:—

Hydrotherapy	213
Antiseptic treatment	33

Diarrhea	4
Hemorrhage	1
Heart stimulants	31
Nervous symptoms	1
Antiperiodic treatment	27
Antipyretics	1

In this decade the treatment by the various *intestinal antiseptics* was introduced, but, after a fair trial, they were discontinued in my service, because I was not convinced that any benefit resulted from their administration.

Twenty-seven received quinin, because of mixed infection, but only 4 were given antipyretics; phenacetin was given to them to allay nervous manifestations and not to reduce temperature. Of 252 cases 213 were treated by hydrotherapy. Under this head are included cold sponging, cold pack, and tubbing after the method of Brand. The *regular* treatment recorded in the tables means one or all of the three methods, according to the indications in each case. About the same number as in the previous decade received stimulants, but for a different purpose. While in the second decade such drugs were necessitated by the cardiac depression from the coal-tar derivatives, now they were given as routine treatment in carrying out the Brand method.

In considering the results obtained in this one hospital during the last decade it may not be wise to lay too much stress upon figures. The reduction in death-rate may not be due to the treatment, but by comparison with the mortality in preceding periods under different methods it emphasizes the following facts:—

From 1892, the beginning of the third decade, to 1898, inclusive, the treatment followed was hydrotherapy, antiseptic, and antiperiodic. During this time 88 cases were treated, 10 of which died, giving a mortality of 11.36 per cent. At the beginning of 1899 the purely hydrotherapeutic treatment was begun and has been strictly followed throughout the remainder of the decade, with the result that of the 164 cases then treated 18 died, giving a death rate of 10.97 per cent. Four cases of the last series died of pulmonary tuberculosis either during or directly following a typical course of enteric fever. We may rightly exclude them from our mortality list when the death-rate will be 8.54 per cent.

In concluding I desire to state that the cases were culled, and the charts prepared, from many imperfectly kept records, by the assiduous labors of Drs. Grasty, Turner, Riley and Smith.

A STUDY OF THE CONDITION OF THE UPPER AIR PASSAGES BEFORE AND AFTER INTUBATION OF THE LARYNX. ALSO, AN INQUIRY INTO THE METHOD OF FEEDING EMPLOYED IN THE CASES.

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It has occurred to me that it might prove interesting to study the child's condition both before and after intubation. We all know that laryngeal stenosis will frequently be relieved, and the child discharged cured, after one intubation and one extubation. There are other cases which require several intubations before a permanent cure results.

For the purpose of this paper I have examined a series of children that were operated upon several years ago. Two classes of cases have been selected. One series was seen at the Willard Parker Hospital, and the cases were intubated by the resident or assistant resident physician. The cases in this series cover the years of 1896 to 1900, and were under the treatment of Dr. E. G. Bryant and Dr. Somerset.

FIRST SERIES. CHILDREN INTUBATED IN THE HOSPITAL.

The children admitted to the Willard Parker Hospital belong, as a rule, to the laboring class of people. Exceptionally, the service at the hospital receives patients of a better class. All of the children examined by me belong to the tenement house district of New York City. The houses are densely crowded tenements having a minimum quantity of fresh air and sunlight. It is not unusual to see cases from such unsanitary surroundings ending fatally. These children are, as a rule, very anemic and are extremely susceptible to infection.

SERIES OF HOSPITAL CASES.

No.	Name.	Sex.	Time of Patient in Hospital.	Kind of Feeding.	Age.	No. of Antitoxin Units Used.	When Intubated.	No. of Intubations.	Recent Examination at the Age of	Condition of Throat.	Condition of Chest.	General Condition.
1	Celia M.	F.	30 days.	All Breast-fed.	3 yrs.	6,000 units. N.Y. Dpt. of Health.	2d day of illness.	1	7 yrs.	Enlarged tonsils, Chronic pharyngitis.	Slightly pigeon-breasted.	Rachitic, anemic.
2	Ida S.	F.	44 "		4 "	2,000 units. N.Y. Dpt. of Health.	4th day of illness.	1	3 "	Enlarged tonsils, Pharyngitis.	Rachitic, Harrison's grove, beaded ribs, funnel shaped depression, pigeon-breast.	
3	Nathan L.	M.	26 "		3 "	3,000 units. N.Y. Dpt. of Health.	2d day of illness.	1	3 "	Rhinopharyngitis.	Slight rachitis.	General condition fair. Subject to dyspneic attacks. Following year had measles and croup. Influenza and bronchitis lately.
4	Albert R.	M.	15 "		3 "	2,000 units. N.Y. Dpt. of Health.	2d day of illness.	1	3 "	Enlarged tonsils, Adenoids, Pharyngitis.	Rachitis.	Lymph nodes enlarged. Otitis, left. Rachitis. Measles and bronchitis after discharge.
5	Abie A.	M.	37 "		2 "	2,000 units. N.Y. Dpt. of Health.	3d day of illness.	1	3 "	Tonsillitis hypertrophica, Rhinopharyngitis.	Harrison's grove, beaded ribs.	General condition fairly good. Measles shortly after convalescence. Mild attack of croup two years later. Dyspnea at times, due to catarrh.
6	Hugh L.	M.	17 "		5 "	2,000 units. N.Y. Dpt. of Health.	9th day of illness.	1	3 "	Enlarged tonsils, Pharyngitis.	Chest well developed.	General condition good. Has an occasional cough.
7	Sammy S.	M.	18 "		6 "	2,500 units. N.Y. Dpt. of Health.	5th day of illness.	1	6 "	Enlarged tonsils, Pharyngitis.	Excellent, no rickets.	General condition good. Well nourished boy. Mild throat symptoms. Is subject to colds.
8	Patrick R.	M.	19 "		4 "	2,800 units. N.Y. Dpt. of Health.	14th day of illness.	4	6 "	Had tonsils removed after leaving hospital.	Mild rachitis.	Cervical lymph nodes removed after leaving hospital.
9	Henry R.	M.	9 "		8 mos.	1,500 units. N.Y. Dpt. of Health.	4th day of illness.	1	6 "	Enlarged tonsils, Pharyngitis, Coryza.	Rachitic funnel shaped thorax.	One year later had pneumonia.
10	Max L.	M.	29 "		1 yr.	1,600 (dry) units. 1,000 (filtered) units. N.Y. Dpt. of Health.	2d day of illness.	3	6 "	Enlarged tonsils, Post-nasal catarrh, Adenoids.	Rachitic, Harrison's grove, carious teeth.	Since leaving hospital, pneumonia, laryngitis and strabismus. Returned after five years with mild diphtheria. (No intubation.)

HOSPITAL CASES: 10.

8 cases required one intubation
1 case " three intubations
1 " " four "

DAY OF THE DISEASE.

4 cases were intubated on the 2nd day of illness
1 case was " " " 3rd " " "
2 cases were " " " 4th " " "
1 case was " " " 5th " " "
1 " " " " " 9th " " "
1 " " " " " 14th " " "

One case intubated seven years ago has had no illness since. Four cases intubated six years ago are in excellent health to-day. (One case has remained entirely well. One case had enlarged cervical lymph nodes. One case had pneumonia one year later. One case had pneumonia and paralysis and five years later had a second attack of diphtheria but no laryngeal stenosis.)

Five cases intubated three years ago are in good condition to-day. (Three had measles and bronchitis after recovery. One has not had a day's illness since intubation. One case had a mild attack of croup two years after intubation, but did not require reintubation.)

Rachitis seems to play an important part in the causation of laryngeal stenosis, just as we know that rickets is met with in laryngismus stridulus. Eight cases out of the 10 reported in this series showed some form of rickets.

There seems to be a certain predisposition for the development of laryngeal stenosis in children affected with diphtheria who are rachitic.

Condition of the Throat.—In all of the cases of this series some form of chronic tonsillar or pharyngeal condition was found. Adenoids were also seen in 2 of these cases. Whether or no the hypertrophied tonsils seen in these cases were present at the time of intubation is not known. The fact that 8 cases out of 10 still showed enlarged tonsils, and 1 case, which makes 9 cases, reported having had a tonsillotomy performed, proves that hypertrophied tonsils must have menaced the children's health before the intubation.

Feeding During Infancy.—It is certainly an interesting fact that all of the children in this series were breast-fed. When abnormal conditions, as rickets, scurvy, tuberculosis, syphilis or other undermining disorders exist, then recurring stenosis of the larynx might possibly be provoked by such chronic disease.

These cases of recurring stenosis sometimes require months and, in rare instances, years of intubating until recovery takes place. I have seen at least 6 chronic tube cases while making my rounds in the wards at the Willard Parker Hospital. Intubation has in America entirely replaced tracheotomy for the relief of acute laryngeal stenosis. Rubber tubes are used exclusively for intubation. The old metallic tubes have long ago been discarded. Tracheotomy is used as a secondary operation, usually to cure "retained tubes." When laryngeal stenosis persists and the patient cannot get along without the tube then a tracheotomy is resorted to.

A very interesting series of papers, describing the above condition, has been published by Dr. John Rogers, Jr., under the title of "Postdiphtheritic Stenosis of the Larynx" (Retained Intubation Instruments and Retained Tracheal Cannulæ).

Rogers says: "The commonest cause of postdiphtheritic stenosis necessitating long-continued intubation is a hypertrophy of the subglottic tissues accompanied by a chronic inflammation. The intubation is in no way the cause of this, as it occurs irrespective of the operation. *Less often there is an ulceration,* and *subsequently* a formation of a greater or less amount of *cicatricial tissue and contraction.* This likewise is not the result of the intubation except in rare, and practically unavoidable, instances. But it certainly may follow a tracheotomy, and in a larynx, already chronically stenosed, it makes the condition worse, but not necessarily more difficult to cure. *Exuberant granulations within the larynx apparently do not occur with intubation, no matter how prolonged.* I should add that in a recently published book on 'Tubage et Tracheotomie en dehors du Croup,' by Antoine Sargnon, of Lyon, France, a half-dozen more cases of retained tubes are cited, in which ulceration and cicatrization are mentioned as causes of the stenosis, but without details; and, as I could not find the original references, I cannot well discuss them."

The frequency of the occurrence of a postdiphtheritic stenosis accompanying intubation is a matter of some interest. Dillon Brown says that he has encountered it about once in every 75 or 100 cases.

C. G. Jennings, of Detroit, with an equally large experience, says that he has never met with the severer forms of the difficulty, but that in two or three instances he has had to continue the intubation as late as the third week, after the first insertion before recovery was complete. His associate, Shurley, has never had any trouble with delay in the removal of the tube. Galatti, in the article above referred to, states that he had two chronic stenoses in thirty-one intubations. He reports Ranke as having had 1 case in many hundred; Heubner, 1 in 250, and Bókay 2 in 800. George McNaughton, of Brooklyn, says that he has had but few cases in many hundred, and these recovered at the latest within several weeks.

At the Nursery and Child's Hospital of this city there have been no noticeably prolonged intubations. The New York Foundling Hospital has had 6 cases in a total of approximately 500. Investigation of the statistics at this institution, forcibly illustrates the advantages in the use of the diphtheria antitoxin. The house physician complained to Dr. Rogers that, before the introduction of this remedy his predecessors had always averaged at least one intubation a week, and thereby obtained much valuable experience; but about the time he came into the hospital, the rule was instituted that antitoxin should be given to every patient as soon as there was any suspicion of diphtheria. The result was that he had never in a year's service had a single opportunity to practice intubation on a living subject.

Number of Intubations.—In the above series 1 case required four intubations. Another case required three intubations. The majority required but one intubation to effect a cure.

Kind of Antitoxin Used.—The antitoxin employed at the Willard Parker is made at the laboratory under the supervision of Dr. Wm. H. Park, of the New York City Department of Health.

Method of Intubation Employed at the Willard Parker Hospital.—The dorsal method of intubation is the one advocated by Dr. E. G. Bryant and Dr. Thos. De L. Burckhalter at the Willard Parker. The advantage claimed for it is that we can do without assistants, which in an emergency is a great advantage. I have used this method and agree with Bryant that it is preferable to the upright position advocated by O'Dwyer.

The dorsal position in intubation is also used and advocated by Casselberry of Chicago; Carstens of Leipsic is another strong advocate of it.

SERIES OF PRIVATE PRACTICE CASES.

No.	Name.	Age.	Sex.	Location of Membrane.	Case of.	No. of Antitoxin Units Used.	Time of Intubation, Day of Dis.	Tube Retained.	No. of Intubations.	Condition of Throat.	Complications.	Results.
1895												
1	W.	2 yrs.	M.	Pharynx, tonsils, larynx.	Dr. A. W. Newfield.	2,500 units.	2d day.	4½ days.	1	Tonsils enlarged.	None.	Cured.
2	R.	2 "	F.	Pharynx and larynx.	Dr. H. J. Boldt.	3,000 "	3d "	26 "	4	Pharyngitis, tonsillitis.	Septic case, nephritis.	
3	S.	5 "	F.	Larynx.	Dr. L. Kohn.	3,000 "	5th "	14 "	3	Tonsils enlarged.	None.	Cured.
4	R.	3 "	M.	Pharynx, tonsils, larynx.	Dr. O'Connell and Dr. A. Bienenstock.	2,000 "	2d "	12 "	2	Chr. pharyngitis, hypertrophied tonsils.	None.	Cured.
5	K.	4 "	M.	Pharynx and larynx.	Dr. A. W. Newfield.	2,000 "	3d "	5 "	1	Hypertrophied tonsils.	None.	Cured.
6	A.	5 "	M.	Pharynx, tonsils, larynx.	Dr. Emil Joel. Children's Dpt. Ger. Pol.	2,000 "	2d "	5 "	1	Hypertrophied tonsils.	Bronchitis.	Cured.
1896												
7	D.	4 "	F.	Pharynx, uvula, larynx.	Dr. S. Landsman.	2,500 "	3d "	6 "	1	Adenoids, hypertrophied tonsils.	None.	Cured.
1897												
8	B.	3 "	M.	Pharynx and larynx.	Dr. L. Bischof.	2,000 "	3d "	5 "	1	Hypertrophied tonsils.	None.	Excellent.
9	R.	3 "	M.	Pharynx, tonsils, larynx.	Dr. A. Bienenstock.	4,000 "	2d "	6 "	1	Adenoids, hypertrophied tonsils.	None.	Excellent.
1898												
10	A.	3 "	M.	Pharynx and larynx.	Dr. E. Lowenbein.	2,000 "	3d "	6 "	1	Hypertrophied tonsils.	Measles.	Coughed up tube. Asphyxiated.
11	S.	4 "	F.	Pharynx, tonsils, larynx.	Dr. M. Ghertler.	3,000 "	2d "	7 "	1	Hypertrophied tonsils, pharyngitis.	None.	Excellent.
12	K.	2 "	M.	Tonsils, uvula, pharynx.	Dr. Th. Manley.	2,500 "	3d "	5 "	1	Adenoids, hypertrophied tonsils.	None.	Excellent.
13	G.	3 "	F.	Pharynx, tonsils, larynx.	Dr. Geo. Saxe.	1,500 "	2d "	5 "	1	Hypertrophied tonsils.	None.	Cured.
1899												
14	L.	2 "	M.	Larynx.	Dr. H. Sheffield.	1,500 units.	1st "	22 "	5	Hyper. tonsils, chronic rhinopharyngitis.	Br.-pneu.	Cured.
15	L.	3 "	M.	Pharynx and larynx.	Dr D. Jacobson.	2,000 "	3d "	14 "	3	Enlarged tonsils.	None.	Cured.
1900												
16	O'M	5 "	M.	Pharynx and larynx.	Dr. C. Campbell.	2,000 "	2d "	5 "	1	Adenoids, hypertrophied tonsils.	None.	Cured.
17	C.	3 "	M.	Pharynx, tonsils, larynx.	Dr. A. Fanoni.	3,000 "	3d "	5 "	1	Chr. pharyngitis, chr. tonsillitis, vegetations.	None.	Cured.
1901												
18	H.	4 "	M.	Pharynx, larynx, tonsils.	Dr. A. Rose.	3,000 "	2d "	5 "	1	Hyper. tonsils, adenoid vegetations.	None.	Cured.
19	S.	3 "	F.	Pharynx and larynx.	Dr. S. Landsman.	2,000 "	3d "	6 "	1	Hypertrophied tonsils.	None.	Cured.
20	P.	4 "	F.	Pharynx and larynx.	Dr. C. Hoffman.	3,000 "	2d "	25 "	5	Rhinopharyngitis, hyper. tonsils.	None.	Cured.
21	B.	5 "	F.	Pharynx, tonsils, larynx.	Dr. H. Weinstein.	2,000 "	3d "	6 "	1	Chronic tonsillitis, adenoid vegetations.	None.	Cured.
22	M.	4 "	F.	Larynx.	Dr. H. Groehl.	3,000 "	5th "	6 "	2	Hypertrophied tonsils, adenoids.	None.	Cured.
23	R.	11 mos.	F.	Larynx and tonsils.	Dr. W. H. Kahrs.	1,500 "	2d "	7 "	1	No adenoids or enlarged tonsils visible.	Br.-pneu.	Excellent.
24	G.	4 yrs.	F.	Larynx, tonsils, pharynx.	Dr. A. E. Isaacs.	2,500 "	3d "	5 "	1	Enlarged, hypertrophied tonsils.	None.	Cured.
25	C.	4 "	M.	Pharynx, tonsils, larynx	Dr. A. W. Newfield.	4,000 "	2d "	12 "	3	Hyper. tonsils, granular pharyngitis.	None.	Cured.
26	K.	2 "	F.	Tonsils, pharynx, larynx	Dr. S. Landsman.	3,000 "	2d "	6 "	1	Adenoid vegetations, hyper. tonsils.	None.	Cured.

SECOND SERIES. CHILDREN INTUBATED IN PRIVATE PRACTICE.

The children of this series were seen in consultation with the family physician, excepting 1 case which was referred to me for personal treatment. (Case II.) They belong to the better class of children, which implies better sanitary surroundings, better food and prompt medical aid, when the first symptoms of illness are noticed. It was much easier to study this series of cases, as the physician in attendance, as a rule, gave me the required data.

Case X. should be excluded in this study as the child coughed up its tube (autoextubation), and died of asphyxia before the physician arrived. Case IX. must also be excluded as it was impossible to obtain satisfactory details concerning the progress of the case after it was intubated.

6 cases were intubated 8 years ago
1 case was intubated 7 “ “
4 cases were intubated 5 “ “
2 “ “ “ 4 “ “
2 “ “ “ 3 “ “
9 “ “ “ 2 “ “

One of the cases in this series contracted scarlet fever and died two years after intubation. So that 3 cases out of this series must be excluded, leaving 23 cases from which reports have been received.

DAY OF THE DISEASE.

1 case was intubated on the 1st day of illness
11 cases were “ “ “ 2nd “ “ “
9 “ “ “ “ “ 3rd “ “ “
2 “ “ “ “ “ 5th “ “ “

NUMBER OF INTUBATIONS REQUIRED.

15 cases required one intubation
2 “ “ two intubations
3 “ “ three “
1 case “ four “
2 cases “ five “

LENGTH OF TIME THE TUBE WAS WORN.

1 case	26 days	2 cases	7 days
1 “	25 “	5 “	6 “
1 “	22 “	8 “	5 “
2 cases	14 “	1 case	4½ “
2 “	12 “		

The average length of time the tube was worn in the above 23 cases was 9½ days or 228 hours.

Rachitis.—In this second series of cases we are dealing with children brought up in excellent surroundings. In the families of the better class in New York City the majority of mothers do not nurse their own infants. Wet nurses are not commonly employed. Thus the larger number of these children are to-day brought up by bottle feeding. It is, therefore, no wonder that in the present series of cases rickets due to malnutrition or inanition was very frequently encountered. The susceptibility of the rickety child has frequently been mentioned by many authors. In this second series of cases rachitis was associated in 19 cases.

One very interesting case in this series was a child (an idiot) four years old, seen in consultation with Dr. C. Hoffman. This was one of the most trying cases and required five intubations extending over a series of twenty-five days. The child made a splendid recovery. Such cases in private practice are invariably supervised by a trained nurse. In this particular case careful feeding in addition to competent nursing were the means of saving the child's life.

Condition of the Throat.—Not one of these cases had a normal throat at the time of the intubation. Adenoid vegetations, enlarged tonsils, and chronic rhinopharyngitis were met with in almost every case. When the danger of a diphtheritic laryngeal stenosis in a child is considered, then it is certainly important to urge the removal of hypertrophied tonsils or adenoids, if present, and to restore normal conditions in the rhinopharynx if possible. Greater attention should be bestowed on the nose as the most fatal cases are those of nasal diphtheria in which general sepsis follows.

After Effects Resulting from Intubation.—While some physicians have reported the existence of a bronchial catarrh during the first and second winter months following intubation, the majority of these 16 cases reported absolutely normal conditions. Two cases have had pneumonia, in one child five years after intubation and in the other child three years after intubation.

Constant cough or laryngitis lasting many months was encountered in 4 cases of my series. All in all there is no case in my series in which a distinct bronchial or laryngeal catarrh could be traced to or associated with the intubation.

Rogers says: "As regards the etiology of postdiphtheritic stenosis of the larynx and retained intubation tubes, the views of the late Dr. O'Dwyer are, of course, worthy of the greatest consideration. Nevertheless, I believe they are wrong. He maintained that the condition was the fault either of the operator or of the instruments, which means careless or unskilled insertion, or the use of poorly constructed, and, therefore, improperly fitting tubes. Formerly, while he was experimenting with and perfecting his instrument, he sometimes encountered ulcerations and granulations; and the 2 cases he reports of granulations at the base of the epiglottis, where it impinged upon the head of the tube, might properly be counted in this class. At all events there is no other record of a similar occurrence from the use of *the hard-rubber* tube as at present made. It must be admitted, however, that erosions and ulcerations are possible with a metal tube, as its surface soon becomes rough from a deposit of what is apparently calcareous matter. But whether ulcerations and subsequent cicatrices may or may not be thus produced has very little to do with the matter, as they do not seem to be the usual cause of the stenosis in the reported cases. . . . And it is important, from a medico-legal aspect, as well as for the sake of intubation, to show that neither the operator nor tube, ordinarily, has anything to do with a possible postdiphtheritic stenosis. It is granted that lacerations and serious permanent damage to the larynx can, of course, be inflicted by extreme lack of skill or care; but to claim that this must have happened in all, or even some, of the cases of retained tube is not borne out by the facts. A certain amount of traumatism is necessarily inflicted at every intubation, and if, by any chance, a chronic stenosis follows, the traumatism is always blamed for it. That this is wrong, at least in the average case, is proved to my mind by the pathology of the condition. It is the same whether the stenosis follows intubation or a primary tracheotomy."

Causes of Stenosis.—Emil Köhl, in his inaugural address at Zurich, in 1884, described very fully the pathological condition of the larynx in cases of chronic postdiphtheritic stenosis with retained tracheal cannula. This article demonstrates most conclusively that not the least frequent cause of the difficulty is a chronic hypertrophic, subglottic laryngitis, a chronic thickening of the soft parts between the vocal cords and the lower border of the cricoid cartilage. The hypertrophy of the soft tissue was so marked that respiration, except through tracheal fistula, was impossible. These cases, of course, had never been intubated; and, therefore, the chronic inflammation within the larynx cannot be charged to the irritation or traumatism consequent upon the insertion or wearing of an intubation tube.

Another and more frequent cause of the stenosis was shown to be granulations and cicatrices in the neighborhood of the tracheal wound or cannula. And the nearer the cannula was to the vocal chords the worse were these complications. The vicinity of the upper end of the wound was more prone to granulations and cicatrices than the lower, as the upper end generally involved or was close to the larynx, where the mucous membrane is more loosely attached than below. This bears upon the cause of the stenosis described in some of the reported cases of retained tubes which have finally been tracheotomized. If the tracheotomy has existed long enough, it, and not the original intubation, may have given rise to the cicatricial tissue.

Incidentally, it may be noted that the number of devices described by Köhl for remedying a postdiphtheritic stenosis will illustrate the difficulties in the way of successful treatment other than by intubation.

In speaking of the operative treatment of stenosis of the larynx following intubation and tracheotomy, Arthur B. Duel says: "The important points to remember: (1) About 1 per cent. of all patients intubated for acute laryngeal stenosis will 'retain' the tube. (2) The cause of the retention is due, in the majority of cases, to chronic inflammation of the intralaryngeal mucous membrane and hypertrophy of the subglottic tissues, and is not, as has been generally supposed, the result of granulation, ulceration, or cicatricial bands. (3) Autoextubation in these cases is the rule, and adds greatly to the danger where an experienced intubator is not at hand. As a result of this a large number of such cases are tracheotomized for safety. (4) Where high tracheotomies are done, cicatricial bands are almost certain to form in the trachea or lower part of the larynx above the tracheotomy wounds."

The points in treatment which should be emphasized are:—

(1) The largest sized tube possible should be inserted, under an anesthetic. In case of contraction, rapid dilatation should be done by beginning with the small sizes and working up to the large special tube, which is to be left in place. This special tube should be as large as can be inserted, and the constriction below

the neck only $^1/_{32}$ inch smaller than the retaining swell. (2) This tube should be left in, undisturbed, for six weeks at least. It should then be removed, and, if a cure has not been accomplished, it should be replaced for six weeks longer.

To illustrate the above the following case may be cited:—Child B, two years old, was seen by me in 1895, in consultation with Dr. McConville, of Brooklyn. The child had had a severe pharyngeal, tonsillar and laryngeal diphtheria. The temperature was 101°F., pulse 140, respiration labored. Child cyanotic. I intubated with a No. 2 metal tube, which immediately relieved the laryngeal stenosis. The general condition of the child improved greatly and three days later I was requested to extubate. Several minutes after extubation marked laryngeal stenosis recurred so that a second intubation was necessary. The child's condition again improved, and when normal conditions prevailed, in about four days I was again requested to extubate. Thus the child was intubated and extubated every four days for a month. As the family were unable to retain the services of a competent trained nurse, and as the child required frequent medical supervision, the case was transferred to the Gouverneur Hospital. Dr. Rogers treated this case as he does all of his "retained tube" cases by introducing the largest sized tube that can be worn, and allowing the tube to remain *in situ* four, five or six weeks before extubating. After one month of this treatment I was informed that extubation permanently relieved the condition and the child was discharged from the hospital cured.

"The trouble in these cases is that autoextubation and frequent reintubation defeat the purpose of the tube by constantly irritating the larynx. I am, therefore, in favor of splitting the larynx and holding the tube in place by means of the retaining clamp early, in such cases, rather than of resorting to a tracheotomy, which, we have seen, almost invariably adds cicatricial bands to the already existing hypertrophy. In patients who have already been tracheotomized for a considerable time, so that bands have already formed, these constrictions should, if possible, be gradually dilated, and the special tube be then allowed to remain. Should it be impossible to dilate, however, or should autoextubation take place frequently after dilatation, a thyreotomy should be done, and the tube be held in place, as was necessary in the 3 cases reported."

Paralysis of the Vocal Cords.—Very many cases have been reported by competent observers on both sides of the Atlantic. In America, Waxham, Rosenthal, Engelmann, myself and many others; in Europe von Bókay, Trumpp, Egidi, Galatti, Massei, and Escat.

INTUBATION IN HOSPITAL PRACTICE.—*Indications for Intubation.*—There is a decided difference between intubation in a hospital or intubation in private practice. In the Willard Parker Hospital, of New York, there are always several physicians ready to intubate at a moment's notice. I have seen more than 1 case of mild stenosis treated with antitoxin and careful dietary, get well without intubation. Haste is not necessary, and each case is carefully treated. When intubation was not regarded as sufficient relief I have seen several cases tracheotomized by the assistant resident physician, Dr. Beery, with excellent results.

INTUBATION IN PRIVATE PRACTICE is an entirely different matter. Prof. Johann von Bókay in his review regarding intubation published in the "Transactions of the Section on Diseases of Children," held at Hamburg, 1901, honors me by the following quotation. "Auch halte ich das Vorgehen von Louis Fischer, des hervorragenden intubators aus New York, für unrichtig, der sagt: Ich mache es mir zur Regel—wenn ich sicher den Nachweis liefern kann, dass es sich um eine Diphtherie handelt und ich das Vorhandensein des Klebs-Löffler-Bacillus constatirt habe die intubation sofort vorzunehmen, wenn sich die geringste Stenose zeigt."

While his statement is true, it does require a slight modification. When a mild case of laryngeal stenosis is encountered in private practice, then judgment must be used regarding the time for intubation. The points to be considered are: the distance at which the patient lives, the amount of diphtheritic infection that we are dealing with, and the circumstances of the people in which the case occurs. If the child is fortunate enough to be under the observation of a competent nurse, who recognizes the slightest increase in the stenosis, watches the condition of the heart, and calls the physician the moment the slightest danger arises, then the conditions are most satisfactory and we can wait with intubation, otherwise we are compelled to intubate when slight evidences of stenosis appear. I do not advocate intubation the moment stenosis exists. In Case XXI. of my series of private cases above reported, seen in consultation with Dr. Harry Weinstein, the stenosis of the larynx was treated by an injection of antitoxin, the child placed under the care of a competent trained nurse with detailed instructions *regarding progressive symptoms. Twelve hours later,* when the *stenosis increased* in severity, I was summoned hurriedly to intubate. In this case the child wore the tube six days, and required but one intubation to complete the cure of the stenosis. In America the majority of intubated cases occur in private practice. Von Bókay states that according to Jacobi, only 5 per cent. of diphtheritic laryngeal stenosis are treated in the special [Willard Parker] hospital. The rest, 95 per cent., occur in private practice.

The smooth rubber tube with or without metal lining is now generally used for the relief of laryngeal stenosis. Smooth rubber tubes, with a retaining swell, the advantage of the same over the metal tube in not having calcareous deposits after being worn for weeks is certainly noteworthy. The corrugated rubber tubes which were introduced by me several years ago have certainly served me very well in the case of "retained tube," which I desire to report.

This case occurred in the practice of Dr. A. W. Newfield. The child was about four years old, and had suffered for several years with hypertrophied tonsils and adenoid vegetations, in addition to a chronic pharyngitis. The family physician advised the parents to have the throat operated owing to the possible danger of infection with diphtheria. This prophylactic measure was not carried out. I saw the case on the second day of illness, in consultation with Dr. Newfield, and found diphtheria involving the pharynx and tonsils which spread very rapidly to the larynx. The same day intubation was required to relieve a severe stenosis. The stenosis was so severe when I saw the child, and the pulse so weak, that it required a rapid introduction of the tube to afford relief. An injection of 3,000 units of antitoxin was given. Three days later a second injection of 3,000 units was made; so that 6,000 units were injected in all. There was recurring stenosis when the tube was removed. It was necessary to intubate within ten minutes. Extubation was performed once every five days, and reintubation was performed from a few minutes to one half hour after removing the tube. Rubber tubes only were used in this case. After the second intubation an alum gelatin film was used on the tube.

After the third intubation it was deemed necessary to use a corrugated tube dipped in a solution of hot gelatin containing

3 per cent. of ichthyol and alum. This tube was worn about five days. After the extubation the child breathed well for about one hour without a tube. A mild form of stenosis was noticed and it was deemed safe to reintubate with an ichthyol alum gelatin film on a No. 4 corrugated rubber tube. This tube remained about six days and was then removed. Stenosis did not recur and the case was discharged cured. Later on the adenoids and hypertrophied tonsils were removed and the child has been well since.

EXTUBATION.—*Antispasmodic Treatment.*—Before resorting to extubation, it has been my rule to give a large dose of bromid of sodium combined with chloral hydrate at least six hours before extubating. At the Willard Parker Hospital, morphin is used hypodermically in doses of $^1/_{16}$ to $^1/_8$ of a grain depending on the age and strength of the child to be extubated. This method is very successful especially when all evidence of diphtheria has passed, and it is simply necessary to relieve peripheral irritation to avoid spasm.

CONCLUSION.—All the children in both these series that recovered had been breast-fed. This form of feeding must have had an important bearing on their bony development as well as their muscular structure.

No chronic cough which could be attributed to the wearing of the tube was encountered. It was presumed by me at the outset of my investigation, that I might meet with a series of cases of chronic laryngitis, chronic tracheitis and chronic bronchitis, dating back to the intubation. We know that pressure of the tube has frequently caused decubitus; hence, it is presumed that an inflammatory process might be invited from the wearing of the tube. Comparing an equal number of children who never suffered with diphtheria, nor were intubated, of the same age and development, it was found that they suffered with pneumonia and other infectious diseases in the same proportion as children in my series of cases. This would seem to be a splendid argument in favor of intubation, as it shows two important points:—

First.—The tolerance of the larynx to a tube for many weeks, one of my cases having worn a tube twenty-six days, another case twenty-five days.

Second.—That a proper fitting tube constructed of rubber leaves no evidence of chronic inflammation directly traceable to the tube. In every one of my cases I questioned carefully if any catarrh originated from, or could be associated with, the wearing or removal of the tube, and received negative replies.

Equally interesting was it to study the contour of the thorax and to see if the development of the thorax suffered by reason of these children wearing tubes.

In spite of the fact that the large majority in the first series as well as in the second were decidedly rachitic, no deformity of the chest due to imperfect oxygenization could be attributed to the effects of the intubation tube. An etiological factor and one on which a great deal of stress has already been laid, is that 90 per cent. in my first series of cases suffered with chronic throat disease, in some form such as hypertrophied tonsils, chronic pharyngitis, or adenoids. In some all of the above conditions were apparent.

It is safe to presume that chronic throat disease invites infection, and I believe that there is a direct relationship between the seed and the soil. If children's throats are in a normal condition, then the risk of infection is reduced to a minimum. It is our duty, therefore, to urge all mothers to have diseased conditions removed, and thus try to prevent the infection of diphtheria, which is certainly a serious condition.

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Experiences Concerning Bülau's Aspiration Drainage in the Treatment of Empyema.—Oloff (*Jahrb. für Kinderhk.*, 1902, Vol. lvi., p. 156) operated on fifteen children with empyema according to Bülau's method. This consists in the introduction of a small trocar into the pleural cavity through one of the intercostal spaces. A rubber drainage tube is passed into the abscess cavity through a cannula, and fastened to the chest wall. The syphon tube, one end of which is in a vessel containing an antiseptic fluid, is connected with the drain by means of a glass link, and the pus drawn off in this manner. About the fifteenth day the condition is usually so far improved as to permit the substitution of a simple drain. Of the fifteen patients, seven were cured, one improved, two unimproved, and five died of lung or heart complications. It is important to study carefully the cases before deciding on the method of operation. Old sacculated empyemas, multiple and gangrenous abscesses, cavities containing tough, stringy pus or such as require rapid evacuation should be treated by resection, but in all other cases Bülau's procedure is preferable to the graver operation.—*American Medicine.*

DIASTASIS OF THE RECTI MUSCLES IN RICKETS, WITH THE REPORT OF A MARKED EXAMPLE IN AN INFANT.*

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While diastasis of the recti muscles in rachitic infants and young children has no doubt been observed clinically by some, yet it has not, so far as the writer has been able to discover, made its way into the literature of the subject as part of the symptomatology. There are several pediatrists of wide experience, among the author's professional acquaintances, who state that they have not observed the condition; some recall having noted it as part of the general relaxation of the abdominal walls in marked cases of pot-belly; while few have systematically looked for its occurrence in every case of rickets that has come under their observation.

It is, however, very frequent in rachitic infants and young children, and varies from a diastasis sufficient to admit one or two fingers to more marked grades. The writer has not, so far, been able to collect a large series of cases from which to generalize as to its absolute frequency, but of 10 cases of rickets in children, varying from six months to nine years, it was present in 7, or 70 per cent. of the cases. This percentage is probably too low; for it must be borne in mind that it is by no means easy, in infants under one year of age, to say whether diastasis of the recti muscles exists or not; because these little patients are unable to assist the examiner by elevating the head and shoulders while in the recumbent position, thus putting the recti muscles on the stretch—which is the only satisfactory way of making the diagnosis of this condition. In older children of four or five years, who can assist by this procedure, a diastasis of half an inch, or even an inch or more, may be made out, which cannot be detected by ordinary palpation.

As loss of tonicity on the part of the muscular system in rickets frequently precedes the development of the bony changes so characteristic of that disease, diastasis of the recti muscles may appear as an early symptom, and has been noted as early as the fifth month. It is doubtful whether it is ever hereditary; though in those cases in which the other manifestations of rickets are present at birth, it is not unlikely that diastasis of the recti muscles might exist also.

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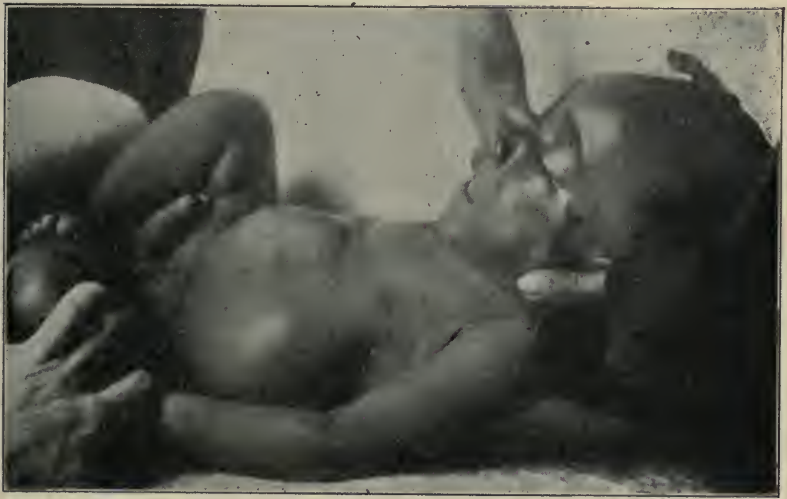
* Case presented before the Philadelphia Pediatric Society, November 10, 1903; and paper read January 12, 1904.

It is slow to disappear, and may be among the last of the symptoms to go. With the disappearance of the rachitic state, however, diastasis of the recti muscles is in many instances repaired. Dr. Hamill's case, in a boy of fifteen years, shown to the Pediatric Society on the same occasion as the author's case, is interesting in this connection. In this boy the condition had persisted since infancy, and had been much more marked two or three years previously, but was slowly getting well.

It is possible that when this condition has once existed to any marked extent, the abdominal walls never completely regain their lost tonicity; or, at least, remain more subject to the effects of subsequent strain. It is not improbable that in some instances—though, naturally, not in very many—this early diastasis of the recti muscles may be a predisposing factor toward visceral ptoses in later life, particularly enteroptosis and gastroptosis in women; and it may be considered a more direct or exciting cause in those instances in which gastroptosis exists in childhood. Here, however, as an additional etiological factor, one must not overlook the primary dilatation of the colon and the stomach.



DIASTASIS OF RECTI MUSCLES IN RICKETS. PROTRUSION OF ABDOMINAL CONTENTS IN MEDIAN LINE.

The responsibility for diastasis of the recti muscles in rickets rests, primarily, upon developmental lack of tonicity on the part of the muscular system, showing itself in weakness of the abdominal walls and in dilatation of the stomach and the gut; and is, secondarily, induced by the associated tympanites of gastro-intestinal fermentation. The pot-belly and the diastasis are thus the result of gaseous distension of the stomach and colon, acting upon relaxed and weakened abdominal walls.

A word must be said in regard to diastasis of the recti muscles in healthy children. There can be no doubt that it very frequently exists, unassociated with any pathological condition whatever; and that it becomes more marked—or, at least, more readily elicited—with advancing infancy and early childhood. At just what age it begins to disappear is hard to say; probably about puberty, as the author has found it frequently present in healthy school-children, both white and colored, at fourteen years of age. At this age, however, there is evident progress toward repair of the condition; as while above the umbilicus there is usually some slight diastasis, below, the recti muscles are in close approximation. This is, as a rule, the condition found in the large percentage of healthy children who have diastasis; that is, the diastasis is confined to the region above the umbilicus, but does not extend below the latter; while in rachitic children it is a complete diastasis involving the whole extent of the recti abdominalis.

In the case of the infant studied by the author the diastasis was sufficiently marked to admit the width of three fingers, had existed since the age of five months, and was not improved when the child was exhibited, at the age of fifteen months. The other signs of rickets were marked. His history is as follows:—

O. B., a colored, male infant, fifteen months old. His parents are apparently healthy, but in very poor circumstances. There is no cachectic disease, syphilis, tuberculosis, nor alcoholism in their history. They have two other children; one, a boy, four years of age, slightly rachitic, and also showing a diastasis of about an inch; and the other, a male infant of four months. The mother has had no miscarriages. The family occupies one small room, in which the meals are cooked and eaten. The patient's birth was non-instrumental, and he was weaned when one year old. While nursing him, his mother was in good health. Since then, he has eaten of the general diet, particularly weak tea and heavy bread He has suffered with gastrointestinal disturbance from time to time; constipation alternating with diarrhea; had measles when eleven months of age; has been feverish at times; and is very restless at night. His belly is at times tender, and causes him evident distress.

Physical Examination.—The infant appears well-nourished and bright. He is unable to walk. The head is large and rachitic, with prominent parietal and frontal eminences; the anterior fontanel is open about one inch. The chest is narrow; the left clavicle is the seat of a "green-stick" fracture; and the ribs are beaded. The abdomen is very prominent, with marked diastasis of the recti muscles. There are symmetrical swelling of the epiphyses of the wrists and ankles, and marked curvatures of the extremities.

The diastasis of the recti muscles was noted by the author about a year ago, at which time it was not so well marked as it has since become. The accompanying photograph of the child, which shows well the marked diastasis of the muscles, was taken by Dr. George W. Norris, to whom the author desires to express his appreciation and thanks.

Diastasis of the recti muscles has not, so far as the author has been able to learn, appeared in the literature of rickets. The German and the French authorities do not mention it—notably, Baginsky, Henoch, and Karewski; nor does Comby, either in his text-book or in the *Traité des Maladies de l'Enfance*. It is not mentioned by Holt, Rotch, Koplik, Ashby and Wright, Keating, Meigs and Pepper, nor Starr, in the American Text-Book; nor does William Osler refer to the condition in his interesting report upon a somewhat different phase of muscle-change—"Absence of the Abdominal Muscles."[1] Büdinger,[2] quoted by Friedjung,[3] reports 4 cases of hernia into the linea alba in children, with symptoms of incarceration; and the latter reports a similar case, but is concerned entirely with the etiology of the symptom complex, as to whether it is due to incarceration or to hysteria. He does not mention diastasis of the recti muscles in its relation to rickets at all, though he does say that it occurs unassociated with any pathological lesion in 75 per cent. of healthy children. The author agrees with this view as stated above.

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SUBPHRENIC ABSCESS IN CHILDREN.*

BY JOHN H. JOPSON, M.D.,
Surgeon to the Children's Hospital, Philadelphia.

Subphrenic abscess is an uncommon affection at any time of life; only a very limited number of cases have been encountered in children, and the subject of subphrenic abscess in early life has received little attention. Maydl†, in his exhaustive discussion of the subject of subphrenic abscess, published in 1894, and based on a study of the cases reported up to that time, collected and analyzed 179 cases of all varieties. An examination of these cases shows that of 169 in which the age of the patient is mentioned in the abstracted histories, only 10, or 5.9 per cent. were under fifteen years of age. It is possible that this does not represent the true percentage of cases in children, and may be entirely too low. Thus, of 68 cases which I have collected from the literature since 1893, 12, or 17.6 per cent., were in children under fifteen years. I excluded, however, many cases from my series in which the age was not mentioned, and which were probably all, or nearly all, adults. A goodly number of Maydl's cases were just over the border line, that is, from fifteen to eighteen, and upwards.

While subphrenic abscess is probably proportionately much less common in children than in adults, it occurs in a sufficient number of cases to make it of interest both to the physician and surgeon. A brief review of the causes which lead to it will be of interest in this connection. Maydl classifies his cases according to their causes into the following groups:—Stomach and duodenum, intestinal, pericecal (including appendicitis), echinococcus, subcutaneous traumatism, cholangitis, perinephritis, metastatic, wounds and gunshot injuries, various and indefinite, including those of pelvic origin in women, caries of the ribs and thoracic. The largest number of his cases came under the group of those due to lesions of the stomach and duodenum; the next to pericecal inflammation, mostly the result of appendicitis; the third to lesions of the gall passages, cholangitis; and closely following these are the cases due to subcutaneous traumatism and echinococcus infection. Of 10 cases fourteen years old and under, studied by Maydl, 3 were due to subcutaneous traumatism; 2 to cholecystitis, 1 of these during and the second after typhoid fever, both associated with rupture of the gall bladder; 1 was due to a perforated gastric ulcer; 1 secondary to perityphlitis; 1 to perforation of the transverse colon, the exact cause of which was unknown; 1 was due to caries of the three lower ribs, and 1 secondary to right-sided pleurisy and pneumonia. Of 12 additional cases to which I have reference (and to these, doubtless, a number of others might be added), there were 11 in which the cause of the condition was given.* No less than 6 were secondary to appendicitis, 1 probably, and another possibly, to perforated gastric or duodenal ulcer; 1 to caries of the dorsal vertebræ; 1 to traumatism, and 1 to calculous cholecystitis.

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* Read before the Philadelphia Pediatric Society, October, 1903.

† K. Maydl. Ueber Subphrenische Abscess. Wien., 1894.

It will thus be seen that children are susceptible to nearly all of the varieties of subphrenic abscess as grouped by their causation, and of these probably the abscesses secondary to appendicitis would comprise the greatest number. The frequency of infectious conditions of the lungs and pleura, pneumonia and empyema in children, would also, probably, give greater significance to this group, if it were not for the fact that subphrenic abscesses from this cause are not as common as some other varieties, only 9 of Maydl's cases coming under this classification. Infection can and does travel downward through the diaphragm, but not with great frequency. On the other hand, infection of the pleura by perforation of the diaphragm occurs in quite a number of cases, resulting in empyema, which, if not detected, may seek spontaneous exit through a bronchus and the trachea, if the patient survives so long.

The treatment of subphrenic abscess is, of course, strictly surgical. Very few cases recover spontaneously, and then only by rupture into cavities from which they can be spontaneously evacuated—a dangerous complication. The prognosis with operation is much better, although the 74 operative cases studied by Maydl gave a mortality of 47.2 per cent. But as Maydl's figures show, and as Sachs† emphasizes in his article on subphrenic abscess in connection with perityphlitic and perinephritic suppuration, the prognosis varies much with the original cause of the abscess, being tremendously high in those cases due to stomach and intestinal perforation, and proportionately good in those of traumatic, perinephritic, and, to a less extent, of perityphlitic and echinococcus origin. For this reason, if no other, the results would be better in children, in whom perforation of the stomach and intestine are less common causes of subphrenic abscess than in adults. Of Maydl's cases in children, 4 were operated upon, all recovering; 6 were not, and all died. Of 12 additional cases I have collected, 10 were operated upon, of which 2 died. In 2 cases the pus was spontaneously evacuated through the trachea. Combining these statistics and adding thereto my own case, there were fifteen operations with two deaths, a mortality of 13.3 per cent.; and of 8 cases not operated upon, 2 recovered, a mortality of 75 per cent.

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* To this number may be added a case which has come to my notice since reading this paper. A. Frederici (*Inaug. Dissertation*, Kiel, 1903; abstracted in *Monatschr. f. Kinderheilk*, July, 1903) reports a case of a girl aged eight years, in whom an abscess ruptured through into the lung and the patient recovered. A diagnosis of subphrenic abscess secondary to liver abscess was founded on tenderness over the liver region before the abscess ruptured, and on the absence of air in the abscess cavity.

†W. Sachs. Archiv. f. Klin. Chirurgie, 1895, L., 12.

I have no doubt that this percentage of post-operative recovery is too high, owing to the universal custom of not reporting fatal cases as eagerly as those of favorable outcome; but it at least can be accepted as confirming the belief that subphrenic abscess in children is less fatal when surgically treated, than in adults, a fact to be explained mainly by the study of its etiology at different ages.

The following is the history of a case in a young infant:—

Charles McG., white, aged fifteen months, was admitted to the Children's Hospital June 19, 1903. Both parents living and well. One other child, three years old, also healthy. The baby was exclusively breast-fed until he was eight months old, and since then he has been on both the breast and solid food. The child was never sick until about fifteen days before admission to the hospital, when he was taken ill with what the mother describes as bronchitis and indigestion. He was brought to the out-patient department of the hospital and treated there. His symptoms were of an indefinite nature, nor was he apparently very ill. No fever was noted, and nothing in his condition suggested to Dr. Griffith, who saw him in the dispensary, any deeper-seated cause for his symptoms. Four days before admission a swelling was noticed by the mother on the child's right side, over the lower front portion of the chest, which rapidly increased in size; for this swelling the child was again brought to the dispensary, whence it was referred to the surgical side, where I saw it and recommended its admission to the hospital.

The child at that time was not emaciated. It had moderate fever—100⅖° F. The condition of the heart and lungs was absolutely negative. Special stress is laid upon the absence of any signs of involvement of the lungs and pleura. Examination of the abdomen was negative. On the right side of the thorax, in the axillary line, was a soft, fluctuating swelling, about the size of a small fist, painful and tender, the skin overlying it covered with dilated veins. Its apex was at a point corresponding to the ninth and tenth ribs. The swelling was evidently due to a collection of pus outside the chest-wall, and its origin could not be determined without operation.

On June 19th, under ether anesthesia, a longitudinal incision over the median line of the swelling evacuated several ounces of pus from between the skin and deep fascia and the chest-wall. Digital examination of the floor of the cavity revealed an opening between the ninth and tenth ribs, in the mid-axillary line, admitting the index finger, which communicated with another cavity of considerable size within the thorax. The examining finger immediately detected the upper convex surface of the liver, which was covered with a fibrinous exudate and formed the base and inner wall of the cavity, while the under surface of the diaphragm bounded it above, and to the outer side. It was shut off in all directions, apparently, from the peritoneal cavity, and revealed itself thus to be a right-sided subdiaphragmatic abscess, which had spontaneously penetrated between the ribs and formed another subcutaneous collection outside the thorax, resulting in a bilocular abscess, the communication being by a restricted opening between the ribs. The rapid appearance of the external swelling was thus explained. The inner cavity extended apparently from where the edge of the liver was glued to the chest and abdominal walls below, nearly, if not quite, to the summit of that organ, being probably limited here by the suspensory ligament, and had probably increased in size both by displacing the liver downward and pushing the diaphragm upward. The contents of the abscess were greenish-yellow in color, odorless, and no gas was observed to escape from the cavity. The examination of the pus by Dr. C. Y. White revealed a staphylococcus in pure culture.

The abscess was drained by a rubber tube and strips of sterile gauze. There was moderate shock following operation and the temperature rose the same evening to 101°F. Under stimulation reaction quickly occurred. The child slept well that night and was in good condition the following morning. The temperature also declined on the 20th to 99° F. and remained at or near normal until the 25th. The bowels were loose and the stools green, however, from the time of admission, and milk was regurgitated at frequent intervals. The temperature again became elevated on the 25th and remained so for three days; mucus appeared in the movements, after which time it again fell to normal. Regurgitation and vomiting continued. The abscess cavity, meanwhile, was draining satisfactorily and the discharge decreasing. The bowel disturbance was the most pressing indication.

On July 2d the child was sent to the Country Branch of the hospital. He was in poor condition still, and for nearly a month longer continued so. The bowels were troublesome and anorexia was marked. The influence of country air and careful nursing was finally apparent, and the child then rapidly regained flesh, strength and activity. The tube was removed at the end of three weeks and the sinus soon closed. It reopened several weeks later, and a little necrosed bone was felt on the rib, a portion of this being later removed. When last seen, October 9th, there was a small superficial sinus, and a small dressing was still worn. (Since that time a small fragment of necrosed bone has been removed from a superficial sinus.) The child's general condition is excellent at the time of writing.

There are several interesting points in the history of this case: —First, the age of the child, fifteen months, is below that of any of the cases studied by Maydl, in whose series twenty-six months is the age of the youngest case; it followed pneumonia of the base of the right lung. Baginsky reported a case in a child two and one-half years old, secondary to appendicitis.

The cause of the condition remains unknown. There was no history of pneumonia, pleurisy, appendicitis or cholecystitis, or of traumatism. It is true the child had a bronchitis and serious intestinal disorder, and the infection may have been of intestinal origin, possibly even from the thorax; or a traumatism, slight and overlooked, may have provoked it. Superficial necrosis of a rib developed during convalescence, but was not present, or not detected, at the time of operation, and could be easily due to secondary infection following erosion by the contents of the abscess, aided by the pressure of the drainage-tube.

The course of the pus, burrowing its way through the intercostal space, in the same manner that an empyema long neglected or unrecognized occasionally does, was most unusual, and most fortunate. It had perforated the diaphragm at this point, and evidently both layers of the pleura in the narrow cul-de-sac which it forms at the ninth interspace, but adhesive inflammation had evidently preceded this perforation, as there was no evidence of pus or fluid in the pleural cavity itself.

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Fat Embolism Following Straightening of the Limbs.—J. Preindlsberger (*Zeitschr. für Heilk.*, 1903, Hft. ii.) reports a case occurring in a girl of seventeen, with bilateral genu valgum. The knees were straightened, under anesthesia, by means of Lorenz's osteoclasts, the operation being accomplished with very little difficulty. Two days later the patient was suddenly seized with dyspnea, pain in the epigastrium, nausea, and rapid pulse. There was slightly impaired resonance at the base of both lungs, with weakened breath sounds and fine râles. A few hours later she suddenly collapsed and died. Autopsy showed some signs of traumatism in the bones around the left knee-joint, and also fat emboli in the pulmonary arteries and capillaries. Death is attributed to the latter lesions.—*American Medicine.*

Clinical Memorandum.

A NEW AND SIMPLE METHOD FOR OBTAINING THE SPUTUM IN CHILDREN.

BY LEONARD FINDLAY, M.B., CH.B.,
Glasgow.

While resident in the Royal Hospital for Sick Children, Glasgow, during the last year, I was frequently struck with the difficulty of diagnosing tuberculosis of the lungs in children, especially young children. It might be days or even weeks before one felt justified in classing a case as tubercular, and in not a few instances the true nature of the malady was only revealed in the postmortem room.

On referring to text-books—not only those on general medicine but also those relating specially to the diseases of children—very little is said about the examination of the sputum as an aid to diagnosis. The authors either do not mention the subject at all, or, if they do, merely speak of the uselessness of depending on the sputum of children as a factor in the diagnosis of disease. Holt ("The Diseases of Infancy and Childhood," second edition, 1903, page 1,088) speaks of passing a stomach tube down the esophagus (surely a little heroic for general practice) and examining the mucus which adheres to it after its withdrawal; and Thomson ("Guide to Clinical Examination and Treatment of Sick Children," 1898, page 112) says that, if it is important to examine the sputum, it should be swabbed from the throat.

If the examination of the sputum is of importance in the diagnosis of disease in the adult, surely it is of equal, if not more, importance in the case of the child, where physical signs as regards the pulmonary system, at least in many cases, are much more difficult of interpretation. It is not that children have no sputum, though in many cases it may not be so profuse as in adults, but the difficulty is that they usually swallow it.

The following is the very simple method which I have used for obtaining the sputum in children, and which I wish to bring under your notice. With a piece of gauze on the forefinger, the pharynx, and especially the epiglottis, is irritated so as to induce coughing, and any expectoration that is coughed up is swept out of the mouth with the finger before it has time to be swallowed. The quantity thus gotten varies, but as a rule is sufficient for bacteriologic examination. Several attempts may require to be made; but even in children as young as six months sufficient has been obtained on which to found a diagnosis.

This method has been practised as a routine measure during the last nine months and with very gratifying results. Many cases of not very well-marked tuberculosis of the lungs were diagnosed early, even on the day of admission to the hospital, and, with only one exception, no case of pulmonary tuberculosis went to post-mortem examination without the tubercle bacillus having been found in the sputum at some time. In cases of meningitis also, supervening on local pulmonary mischief, where there was a doubt as to it being tuberculous or pneumococcic in origin, the finding of the tubercle bacillus in the expectoration removed after the above manner cleared up the diagnosis.

My reason for reporting the above method is, that so far as I am aware, such a simple procedure has not previously been described in English. The procedure is one that has been used for years in the French hospitals, the last reference to it being on page 590 of the *Archives de Medicine des Enfants* for October, 1903, in the article by Dr. G. Araoz Alfars on "Infantile Tuberculosis." The utility of the method seems, however, not to be recognized as widely as it deserves. Certainly it is not in general use, and my experience has shown me that it should be a routine measure, and, if practised as such, would aid to a very great extent the diagnosis of pulmonary tuberculous disease in children.

Collective Investigation Concerning the Value of Silver-Nitrate Injections in the Treatment of Pulmonary Consumption.—T. J. Mays, in the *Philadelphia Medical Journal,* March 14, 1903, reports the results obtained by silver-nitrate injections in 55 cases of pulmonary consumption. Of this number 20 per cent. were cured, 40 per cent. were improved, 13 per cent. were not improved, and 27 per cent. died. The injections appeared to have favorable effects upon the cough and expectoration, vomiting, and night-sweats, and patients showed gains in strength and weight. Mays concludes that the silver-nitrate injections possess a decided antagonism to the complex pathological processes comprehended in pulmonary consumption.

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THE MERGING OF TWO MEDICAL JOURNALS.

Messrs. E. B. Treat & Co., the publishers of the *International Medical Magazine* and of ARCHIVES OF PEDIATRICS, have concluded to merge the two journals. During the five years that Dr. Boardman Reed had charge of the *International Medical Magazine* it was his constant aim to have the periodical of the highest character, readable and reliable. The publishers regret that they must discontinue the *Magazine,* and extend to Dr. Reed their appreciation of his editorial labors. It is hoped that the friends of the *International Medical Magazine* will continue their interest by reading ARCHIVES OF PEDIATRICS, and thus extend its field of usefulness.

THE TREATMENT OF PNEUMONIA.

The discussion on pneumonia in children at the recent meeting of the Section on Pediatrics of The New York Academy of

Medicine, brought out some discordant opinions in regard to methods of treatment but showed an essential community of practice as concerns the principles supposed to be applied. Lobar pneumonia in children is so seldom a fatal disease and is so distinctly self-limited, with a tendency to complete cure, that the most important lesson with regard to its treatment is *non nocere,* that is, be sure, to do no harm. Meddlesome therapeutics has been responsible for the loss of many lives. Digitalis is apt to disorder the stomach; expectorants of any kind are almost sure to be sources of gastrointestinal irritation, and even strychnin and whiskey by the stomach are so likely to do harm rather than good that they can only be employed when there is an absolute indication for them. Only near the crisis, and in feeble children when the heart becomes irregular, is it safe to use these remedies. Even then the suggestion that whiskey well diluted shall be given by the rectum rather than by the mouth seems good, while strychnin should often be administered hypodermatically.

In all cases the one feature of the patient's condition demanding the physician's constant attention is the gastrointestinal tract. If meteorism occurs, the prognosis of the pneumonia may become rapidly serious. The interference with respiration and with the heart action in the child's weakened condition will surely reduce the strength so that the crisis may not be passed successfully. It is important that the food should be limited mainly by dilution and comminution, though it is equally important that plenty of liquids should be furnished to the child. The fever drives off a large amount of moisture and this must be compensated for, else the blood becomes less fluid, the circulation already hampered more difficult, and the oxidation processes, already diminished by the limitation of the respiratory function, fall still further below what is necessary for normal vitality. The child must always be tempted with water rather than milk since many a little patient has taken too much milk in the effort to satisfy his thirst. At the beginning of a pneumonia small amounts of calomel and a full dose of castor-oil are employed with advantage. Subsequently the bowels must be carefully watched, and if twenty-four hours pass without a movement an irrigation or a saline cathartic must be given without fail.

Another condition that may demand active treatment in lobar pneumonia in children is high temperature, if accompanied by nervous symptoms. The main purpose of the antipyresis should be not the reduction of the temperature, but the relief of the hyperesthesia, the restlessness and the loss of sleep. Many children, as the result, apparently, of the deficient oxidation processes in the body stand the high temperatures very well, particularly during pneumonia. This is quite different from what usually obtains in children in other diseases. Where a temperature of 104°F. causes no restlessness or serious nervous symptoms, only the mildest means should be used to reduce the temperature. Coal tar products must not be employed, unless in the smallest doses: Occasionally quinin, in divided doses, not more than three to eight grains per day, according to the age of the patient, will be found of service.

Hydrotherapy must be the mainstay of the physician when high temperature is causing serious restlessness. The trunk should be wrapped in a Turkish towel that has been wrung out of water at a temperature not lower than 80° so as to produce no shock and then water is sprinkled on the towel from time to time, the temperature of this water being gradually lowered; but the treatment must never be continued when the little patient's temperature has fallen below 101° F. The arms and legs must not be included in the wet pack or the result will almost surely be harmful rather than beneficial.

The treatment of bronchopneumonia constitutes a much more difficult problem than that of lobar pneumonia. The disease lasts longer and the patient's nutrition must be kept up at all costs. The limitation of food which is advisable in lobar pneumonia cannot and should not be maintained in this form of the disease beyond the first few days. From the beginning then care must be taken to supply sufficient nourishment of the most digestible kind. The use of predigested foods here becomes important. Their employment must not be delayed until the little patient begins to show signs of weakness. In most cases counter irritation by mustard pastes applied for a few minutes several times a day is advisable, especially when the cough is hard or when there is distress. Inhalations of vaporized benzoin or cresote or of an atmosphere saturated with steam are of particular value when there is cyanosis due to scanty secretion and contracted bronchioles. Oxygen inhalations are frequently life saving; but the oxygen must be used early and freely until the effect desired is produced. As in lobar pneumonia the use of such stimulants as strychnin and whiskey by the bowel are advisable, if the little patient has shown signs of a sensitive stomach. Just as with adults suffering from pneumonia the prognosis of the disease depends not so much upon the amount of lung involved as on the condition of the patient's health at the beginning of the attack, so with children if there has been any previous inflammation of heart, or lungs, or kidneys, or if anemia is present the prognosis is rendered distinctly worse. Pneumonia is not a lung affection producing general symptoms, but a constitutional ailment having its favorite point of attack in the lungs. The microorganisms of the disease are now known to be in the circulation, and must be eliminated by the kidney. Any kidney insufficiency made manifest by the occurrence of albuminuria early in the attack is a bad sign and must be considered as portending a severe attack in most cases. Where such complications are discovered to exist, the ordinary expectant symptomatic treatment must give way to more active measures earlier in the case, but with due care not to overdo medication. The function of the skin must be kept active by hydrotherapy, and the work of the heart lessened by the use of nitroglycerin. No general directions can be given however; the treatment will be helpful only inasmuch as it meets the indications of the individual case.

Dr. David Bovaird, Jr., has been elected Chairman, and Dr. Matthias Nicoll, Jr., Secretary of the Section on Pediatrics of the New York Academy of Medicine, for the year, 1904.

Bibliography.

The American Illustrated Medical Dictionary. A New and Complete Dictionary of the Terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, and the Kindred Branches, including much collateral information of an encyclopedic character, together with new and elaborate tables of Arteries, Muscles, Nerves, Veins, etc.; of Bacilli, Bacteria, Micrococci, Streptococci; Eponymic Tables of Diseases, Operations, Signs and Symptoms, Stains, Tests, Methods of Treatment, etc. By **W. A. Newman Dorland, A.M., M.D.** Third edition, thoroughly revised. Pp. 798, illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903. Price, $4.50 net; with thumb index, $5.00 net.

Of the making of the Philadelphia dictionary there seems to be no end. This, the third edition of Dr. Dorland's Illustrated Medical Dictionary, shows progress in dictionary making that justifies the issue. Many new words and terms have been added, and the tables of bacteria, stains, tests, etc., have been amplified. Radium is defined as "a rare metal obtained from pitch-blende: discovered in 1899. It is stated that radium affords a cheap, simple and most efficient means of radiography." Even in the short time since this was written our knowledge of this "rare metal" has been increased by recent experiments.

The long lists of signs and tests will be found useful, as it is almost impossible to keep all the names in mind.

Colored plates of bacilli, the blood, malarial parasites, sections of the spinal cord and thoracic organs add to the encyclopedic character of the dictionary, and to the attractiveness of the volume which is a beautiful example of book making in a compact and well bound form.

The American Pocket Medical Dictionary. Edited by **W. A. Newman Dorland, M.D.,** Assistant Obstetrician to the Hospital of the University of Pennsylvania. Containing the pronunciation and definition of the principal words used in medicine and kindred sciences, with 566 pages and 64 extensive tables. Fourth revised edition, greatly enlarged. Philadelphia, New York, London: W. B. Saunders & Co. 1903. Price, $1.00 net; with thumb index, $1.25 net.

This is a compact little dictionary, not the larger dictionary of Dr. Dorland's cut down, but a complete volume of a convenient size for ready reference and desk use.

Progressive Medicine, Vol. II., June, 1903. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by **Hobart Amory Hare, M.D.,** assisted by **H. R. M. Landis, M.D.** Pp. 437. Philadelphia and New York: Lea Brothers & Co. Price, $10.00 a year.

A most thorough and elaborate study of strangulated hernia in infants has been made by Estor who tabulated 225 cases. Estor's statistics, as abstracted by Coley, show the great predominance of strangulated hernia in the male infant.

Stengel's study of the literature of the diseases of the blood is important. He states that, as most of the infectious diseases occur in childhood, the points of difference between the blood in childhood and later life must be borne in mind. These differences consist chiefly in the much greater response to pathological conditions with a tendency to hyperleukocytosis and a marked increase in the lymphocytes.

This volume of Progressive Medicine is as complete as such a quarterly can be made.

Progressive Medicine. Vol. III., September, 1903. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by **Hobart Amory Hare, M.D.,** assisted by **H. R. M. Landis, M.D.** Pp. 398. Philadelphia and New York: Lea Brothers & Co. Price, $10.00 a year.

The diseases of the thorax and its viscera are under the editorship of Dr. Ewart, and the abstracts from the literature, particularly those relating to the diseases of the lungs, are of great interest to the practitioner who has the care of patients with pulmonary disorders. Dr. Norris has charge of the Section on Obstetrics and extends by a few pages on the newborn infant the more obviously obstetrical portion of his text.

A Handbook of Obstetric Nursing. By **Anna M. Fullerton, M.D.** Sixth Revised Edition. Illustrated. Pp. 270. Philadelphia: P. Blakiston's Son & Co. 1903.

This little book by a woman practitioner has reached its sixth edition; indubitable evidence that it is a valuable aid to the study of nursing. The style is simple and clear, and the book is well printed.

Three of the longest chapters in the book are devoted to the care of the infant. Dr. Rotch's formulæ and tables for feeding are used. The little work is pretty well up to date, and there is a surprising amount of information contained in its 270 pages.

Society Reports.

THE NEW YORK ACADEMY OF MEDICINE.—SECTION ON PEDIATRICS.

Stated Meeting, Thursday, December 10, 1903.

HENRY HEIMAN, M.D., CHAIRMAN.

HYPERTROPHIC CIRRHOSIS OF THE LIVER IN A CHILD OF SIX YEARS.

DR. SAMUEL M. EVANS presented the patient. There was no history of tuberculosis or syphilis; indeed, there was nothing in the history bearing on the causation of the cirrhosis except the habit of drinking coffee. He believed personally that the cirrhosis was dependent upon an autointoxication arising from the intestine.

A CASE OF HENOCH'S PURPURA, WITH NECROPSY.

DR. WILLIAM L. STOWELL reported this case, and also referred briefly to another case, occurring in a child of three years, that likewise terminated fatally. He said that Henoch's purpura was that variety of purpura characterized by hemorrhages from the gastrointestinal tract. The child, made the subject of this report, was bottle-fed, and was two weeks old. There had been bloody stools and a purpuric eruption for a few days before coming under observation. In a few weeks the child became edematous and died. As a diagnosis of dysentery had been made, Dr. W. H. Park made a thorough bacteriological examination. He was enabled in this way to positively exclude that disease. At the autopsy, the heart was found to be normal, though there were some ecchymotic spots on the pericardium. The kidneys and spleen were normal. The liver was very dark. The lower part of the ileum and the colon were dark and congested. The disease was now thought to be infectious. An examination of the blood showed it to be normal.

DR. L. E. LA FÉTRA suggested that it would be hard to differentiate the case just reported from those not very uncommon ones in which badly nourished children developed petechiæ on various parts of the body. In a recent case that he had seen, occurring in a marantic baby fed at the breast, there was a large collection of blood in the veins of the subcutaneous tissue, giving rise to the formation of little masses.

Dr. Henry Heiman said that examinations of the blood had been made repeatedly in these cases of Henoch's purpura, but the blood had invariably been found normal. One must, therefore, look for a microbic origin, or an anatomical deficiency in the blood vessels.

Dr. H. Koplik observed that in 2 of his own cases, as well as in 1 reported by Dr. Heiman, blood cultures were negative.

SYMPOSIUM ON LOBAR AND BRONCHOPNEUMONIA IN INFANTS AND CHILDREN.

This embraced the following papers and remarks:—

Pathology.—Dr. David Bovaird, Jr., opened the symposium with a paper on the pathology. He said that there were no striking differences in the pathology of lobar pneumonia in early and later life. On section, the lung presented a fairly uniform color and a granular appearance. Partial consolidation of one lobe was more common in children than in adults. The amount of pleurisy was subject to wide variations. Occasionally, small abscesses, or more or less extensive gangrene developed. The most important associated lesions were found in the pericardium, meninges and peritoneum. Bronchopneumonia occurred in about 40 per cent. of all the autopsies at the New York Foundling Hospital. In the first stage there were usually rings of deep congestion surrounding the bronchi, and on opening the latter, a bronchitis was found. The smaller bronchi contained an exudate and the walls were infiltrated with leukocytes. In the second stage, areas of consolidation were scattered here and there through the lung. In the third stage, these areas merged into one another, but the granular appearance observed in lobar pneumonia was lacking. Empyema was a comparatively frequent accompaniment of bronchopneumonia in children, far more commonly than in adults. In about 95 per cent. of the lobar pneumonias, and in 50 per cent. of the bronchopneumonias the pneumococcus was the infecting agent. The tendency of modern opinion was to give more prominence to the general infection and diminish the importance of the local lesion.

Symptomatology and Diagnosis.—Dr. William P. Northrup took up this phase of the subject. He said that experienced nurses and hospital matrons became very expert in detecting the very early symptoms of pneumonia in children. The onset of the disease was abrupt. Runabout children would begin by refusing food, becoming pale and drowsy and, perhaps, vomiting. Nurslings would cry and cough, the nose would become stuffed and there would probably be fever and vomiting. Very soon the presence of toxemia was indicated by drowsiness, chilliness, irritability and fever, and—most important of all—the pulse-respiration ratio would be changed from one to four to approximately one to three. This fact alone should always lead the physician to search for a lesion in the lungs. A little later there would be diminished respiratory murmur over the affected lung, and, successively, harsh breathing, bronchial voice, bronchial breathing and bronchial whiff. Cough was by no means a constant symptom. The degree of toxemia was, as a rule, proportionate to the extent of lung involvement. The stupor might be so profound as to lead to a suspicion of cerebral mischief, and this suspicion often appeared to find support in the presence of some stiffness of the neck; but careful examination of the pneumonia patient would also show resistance in both shoulders and arms, and a disturbance of the pulse-respiration ratio. At times, the presence of a mucous diarrhea served to obscure the diagnosis. This phenomenon, in connection with pneumonia, he was disposed to consider an effort of nature at elimination of toxins. Occasionally, cases of pneumonia in early life bore a very close resemblance to appendicitis.

TREATMENT.—DR. J. E. WINTERS opened the discussion on this topic, confining himself to a consideration of lobar pneumonia. He said that almost every case of lobar pneumonia in early life would terminate in recovery, whether treated or not; hence, such treatment as was employed should not be of a nature that would greatly disturb the little patient. He always insisted that the patient be kept in a warm bed in a room having a temperature of at least 72°F., and he did this because he believed that a cold skin meant contracted cutaneous vessels, and that this, in turn, meant interference with elimination of heat, and consequent increased work for the heart and increased congestion of the already weakened vessels of the diseased lung. Physiologists taught us that about 90 per cent. of the heat loss was by conduction, radiation and evaporation from the body surface; moreover, it should not be forgotten that the external application of cold resulted in a rise of the internal temperature. He objected strenuously to the application of cold to the body surface of a child, not only for these reasons, but because it caused intense nervous excitement and unnecessary resistance; and anything which caused resistance on the part of the child resulted in a rise of body temperature. The child ill with pneumonia should, accordingly, be wrapped in flannel and placed in a crib in a part of the room not exposed to draughts of air. To quiet nervous excitement, nothing was better than the old-fashioned Dover's Powder—not the powder commonly sold at the present time under that name, in which sugar of milk was substituted for the sulphate of potassium. The original powder was an excellent diaphoretic, and as such, was indicated in pneumonia. Aconite was urgently indicated in the early stage of pneumonia, and, for the purpose of still further exciting diaphoresis, he was accustomed to prescribe twenty drops of sweet spirits of nitre every hour to an infant of one year. The food should be reduced in quantity, and the thirst should always be satisfied with water before offering food. The cause of death in children ill with pneumonia was respiratory failure, not failure of the heart as in adults. As a rule, alcohol should be avoided, but when required, as occasionally happened at the crisis, it should be given by the rectum in fairly large doses. In severe cases of pneumonia, oxygen was fully as efficacious as whiskey or strychnin, but it should be given continuously.

Dr. Rowland G. Freeman pointed out that diminished respiratory murmur was not only a valuable diagnostic sign at the beginning of a pneumonia, but it was equally helpful later in the disease as an indication of pleuritic exudation, often an empyema. Too much stress must not be laid upon the physical signs, because pneumonia sometimes ran its course in children without distinct physical signs, and the diagnosis had to be made upon the vital signs and the symptoms. The main points in the treatment were to keep the gastrointestinal tract and the heart in good condition. Abdominal distention was an exceedingly grave complication. He would postpone the use of alcohol until the later stages, and when the heart flagged would give digitalin hypodermatically. Sometimes, when it was very difficult to give any drug, oxygen inhalations would prove very useful as a means of keeping up the heart.

Dr. Charles G. Kerley said that the physician should insist that the infant ill with pneumonia should be kept in the crib and not on the lap, and the sick room should have a temperature of about 70° F. Morning and evening the sick child should be taken into an adjoining room while the sick room was thoroughly aired, and then warmed up to the proper temperature again. During the rest of the time direct communication with the outer air could be safely and conveniently maintained by the use of the "window boards." He did not approve of the use of oiled silk or wadding jackets, because they were uncomfortable to the child and made it sensitive to cold during convalescence. The strength of the food should be invariably reduced, and an action of the bowels should be secured once in the twenty-four hours, if need be, by an enema. He rarely used digitalis, and alcohol only when the assimilative powers were at a low ebb or stimulation by other means failed. Regardless of whether the body temperature was 103° or 106° F., antipyretic measures were employed only when needed to quiet delirium or produce sleep, and unlike Dr. Winters, he had found the cold pack just the thing for this purpose. The body and upper half of the thighs should be wrapped in a large bath towel that had been wrung out of water at 90° or 95° F., the arms and legs being kept free. Gradually the temperature of the water used to moisten the towel was reduced to the point which was found best for the individual case. To avoid unnecessary disturbance of the patient, he should be rolled from side to side and the pack moistened as required. With regard to bronchopneumonia, the speaker said that in addition to the treatment already outlined for lobar pneumonia, certain measures were required because the disease did not terminate by crisis, but continued for an indefinite period. In the early stages of the disease, much benefit would be derived from the use of the mustard jacket and steam inhalations. In the application of the former, one part of mustard was mixed with two parts of flour and applied to the skin until thoroughly reddened at intervals of four hours. The steam inhalations were of great value in bronchopneumonia, and should be given for thirty minutes every hour or so, using twenty drops of creosote to one quart of water. Oxygen was sometimes of value, but should be given intermittently, as he had found no advantage in its continuous use.

Dr. Henry Koplik said that when Dr. Winters considered cold as very detrimental to children, he simply echoed the sentiment of most physicians who had had much experience with children. In the management of the temperature of pneumonia the physician's main reliance should be on hydrotherapy, but little children did not, as a rule, react well to cold. A sponge bath with lukewarm water would often answer the purpose, or the application of a wet pack at 85°F. He would expect more harm than good from the use of aconite and strychnin by the young physician in infantile pneumonia. Alcohol was, in his opinion, valuable both as a drug and a food. He objected to steam inhalations on the ground that they excluded fresh air and loaded the air of the sick room with moist vapor. Poultices were not desirable because of the weight upon the chest. When there was a slight effusion in the chest after a pneumonia had lasted some days, it was generally well to postpone active interference.

Dr. W. L. Stowell said that both theoretically and practically croupous pneumonia was benefited by steam inhalations, and bronchopneumonia was also benefited although, theoretically, it should not be. Many cases of pneumonia did well in tenements under very primitive treatment.

Dr. Walter Lester Carr said with regard to the presence of cough in children, that it was frequently present in pneumonia, and its presence was shown by an expiratory grunt. There were usually gastrointestinal symptoms present in connection with lobar pneumonia. It was important to differentiate between lobar and bronchopneumonia; the former required almost no treatment, whereas the latter often called for active medicinal measures.

Dr. Kerley thought he had been misunderstood concerning his use of cold in children. He did not make use of any great degree of cold, and always used it cautiously and to meet indications.

Dr. S. H. Dessau remarked that his personal experience had led him to place dependence, in making the prognosis, upon whether there was much albumin present in the urine.

Dr. Winters said that he restricted the use of aconite in the pneumonias of children to the first forty-eight hours. The common practice of employing strychnin throughout the disease was to be deprecated; it should only be used at the crisis. Sometimes when the child was suffering from high fever, great relief would be afforded by wrapping up a long and narrow ice-bag in a towel and fastening it around the neck over the large vessels. Such a method of applying cold did not interfere with the cutaneous circulation.

Dr. Bovaird, in closing, called attention to some animal experiments made by Dr. Augustus Wadsworth, which seemed to indicate that the production of a lobar or a bronchopneumonia depended upon the relation of the virulence of the infecting organism to the powers of resistance of the animal infected.

THE PHILADELPHIA PEDIATRIC SOCIETY.

Stated Meeting, Tuesday, December 8, 1903.

D. J. MILTON MILLER, M.D., CHAIRMAN.

THE CHAIRMAN showed a case of

CONGENITAL HEART DISEASE (PULMONARY STENOSIS AND PERFORATE SEPTUM VENTRICULORUM?).

The patient was a boy of six years, the other children in whose family were without abnormality. This boy was "blue" at birth, and has been cyanosed and dyspneic all his life, slight exertion always materially increasing these symptoms. He has had no acute disease. He is undersized for his age, with a decidedly cyanotic facies—the cheeks, lips, and ear-lobes, as well as the mucous membranes, being of a deep-blue color. The fingers and toes are very much clubbed, cyanosed, and cold; and the superficial veins, dilated. The pulse is irregular, the right being at times of slightly larger volume than the left. The apex is palpable rather diffusely in the fifth interspace one-quarter to one-half inch to the left of the nipple line. A slight thrill, systolic in time, is occasionally to be felt over the precordia. The cardiac dullness extends from the third rib to one-quarter inch outside the nipple-line; and to the right, to the middle of the sternum. At the apex, there is a harsh, long systolic murmur, transmitted moderately well into the axilla, and followed by a well-defined second sound. A systolic murmur, harsh in character, is also heard at the aortic cartilage. The second sound is readily detected there, also; but is not so loud as at the apex. In the pulmonary area, the same murmur is audible; but it is more intense and, at times, almost hissing in character. Following this comes a weakened second sound. The murmur is transmitted loudly along the whole course of the clavicle toward the left shoulder. A murmur of much the same character may be heard all over the precordia, but is most intense over an area extending from a point one inch to the left of the sternum, to the left border of the heart; and from the second rib, to the fourth interspace. It is exceedingly high and shrill just inside the left nipple. The murmur can be detected the whole length of the sternum, but with diminished intensity. It grows louder as the stethoscope is moved outward from the left border of the sternum. A murmur can also be heard in the cervical vessels and over the whole of the chest posteriorly, though more to the left than to the right. The lungs and the abdomen are negative. A marked polycythemia is present, the red corpuscles numbering 8,750,000; the white cells 7,840. The hemoglobin is over 100 per cent. The x-ray has shown no enlargement of the terminal phalanges. As is so often the case in congenital heart-disease, the patient exhibits other stigmata:—The penis is curved downward and to the left, and bound down for about half its length to the scrotum; while the meatus is on the under surface of the glans. The eyes have always been "weak," and occasionally painful. On examination, they showed "intermittent nystagmus, patches of choroid atrophy, especially in the right eye, and enlargement, but little tortuosity of the vessels; no choked disc." The boy's temperature is usually a little above normal—98.3° F. to 100.5°F.

The most interesting feature in connection with the case is the nature of the cardiac lesion. Aortic stenosis and mitral regurgitation could be easily excluded, not only on account of the physical signs, but also because of the evidently congenital nature of the case; while the harshness and the long-drawn character of the pulmonary murmur, with its distribution to the shoulder, combined with the weakness of the pulmonary second sound and the marked cyanosis, point strongly to a narrowing of the pulmonary orifice. As, however, this lesion does not explain the loudness of the murmur over the middle of the left ventricle and at the apex, and as the usual signs of mitral disease, particularly marked enlargement of the right ventricle, are absent, it seemed quite probable to the speaker that a perforate septum is also present. Whether the third malformation usually accompanying the foregoing conditions (a patulous ductus arteriosus) also exists, he, of course, could not determine. In making this diagnosis, he was quite aware how often one's antemortem ideas of congenital heart-disease are completely upset by the postmortem findings.

Dr. Griffith agreed with Dr. Miller as to the diagnosis. He, however, referred to the interesting fact that the murmur can be heard very loudly in the mitral region; and this suggested the idea that the chief lesion might be a congenital mitral regurgitation. Against this view is the important point that there is no determinable enlargement of the right heart. Dr. Griffith thought the murmur heard near the mitral region to be probably due to a perforate septum.

A CASE OF CRETINISM.

Dr. J. P. Crozer Griffith exhibited a cretin of extremely well-marked type, the patient being a child of fourteen years. He said that the condition had grown distinctly worse since the age of two years. The child is able to walk, when assisted. The intelligence is infantile. The deposits of fat are very characteristic; and the tongue is constantly protruding from the mouth, reaching down to the chin.

Dr. L. J. Hammond asked Dr. Griffith whether cretins are as susceptible to the diseases of childhood, as are other children.

Dr. L. H. Bernd said that he had had under observation for two years a case in which the use of thyroid had caused the physical appearances of cretinism to vanish within nine months to such an extent that, he believed, no one would have thought of cretinism in the case from the physical condition of the child. The mental condition, however, has not improved to any noteworthy extent. The speaker said that he had suggested and urged transplanting the thyroid from one of the lower animals into the child; but that permission for this had, as yet, been refused by the parents. He asked Dr. Griffith whether he knew of any instance in which transplanting the thyroid had been carried out.

Dr. Griffith, in reply to Dr. Hammond, said that these children apparently contract diseases in about the same way as do other children. He knew of one instance in which a cretin had acquired typhoid fever; and, if he remembered correctly, had died of that disease. In reply to Dr. Bernd, Dr. Griffith said that he could not recall any case described in which transplanting the thyroid had been carried out. He thought that in the case exhibited mental improvement is hardly to be expected, even if some improvement in the physical shape of the boy could be secured. While the effect of thyroid in many cases is strikingly good, one should remember that there are limitations to its usefulness. Its effects are not always satisfactory, particularly in relation to the mental disorder; and its influence upon the physical condition may be unsatisfactory, or render it necessary to discontinue it. The speaker mentioned a case in which the general appearances of cretinism were greatly improved every time that thyroid was employed; but, at the same time, the child always showed progressively increasing weakness, and the medication always had to be discontinued on account of its prostrating effect. Usually, of course, the effect of thyroid in cretinism is strikingly good.

PARALYSIS OF THE BLADDER—REPORT OF A CASE.

Dr. Griffith then reported a case of paralysis of the bladder in a girl of four years. This appeared to have followed an attack of measles. The patient had also a poliomyelitis in early life; but no distinct connection could be traced between the two conditions.

In answer to a question by Dr. Burr as to whether local disease of the bladder had been excluded, Dr. Griffith said that the child had not been sounded for stone, but he thought that everything else had been done.

Dr. Burr referred to the importance, in cases of apparent isolated paralysis of the bladder, of determining the absence of any local cause producing the trouble. As an example, he referred to the case of a woman sent to him with the diagnosis of palsy of the bladder. Incontinence of urine was present, but there was no other sign of nervous disease. As the speaker had never seen nor known of a case of isolated palsy of the bladder due to disease of the central nervous system, he sent her to a surgeon, who found that there was a growth pressing upon the neck of the bladder and mechanically causing the symptoms. In other words, there was no true palsy at all. Dr. Burr asked Dr. Griffith how long the child had had this condition.

Dr. Griffith replied that the child had had it since October, 1902. Dr. Burr thought that in Dr. Griffith's case the leg trouble and the bladder trouble were separate conditions. He believed that the child had had poliomyelitis, which had caused the condition seen in the leg; but that the bladder trouble was probably due to a neglected cystitis.

Dr. J. K. Young referred to a case of spinal injury in a girl of twelve years, due to a fall from a car. In this case there was retention of the urine for seven days, together with paralysis of the legs. The child had to be catheterized, and the urine was frequently bloody. At the end of a week, however, she began to regain power over the bladder. This power was ultimately recovered entirely, while the paralysis of the legs persisted. The child was seen by Dr. Mills and Dr. Willard, and both agreed in the diagnosis of hemorrhage into the cord.

Dr. Hammond referred to a case of temporary paralysis of the bladder in a boy of five years, in which an impacted calculus was found in the urethra. The stone was removed, but the paralysis continued for two or three weeks afterward. Calculi constitute a well-known cause of dribbling of the urine. The speaker referred to the value of ergot in treating these conditions, when unassociated with lesions of the cerebrospinal centres. The same action upon the involuntary muscles of the bladder should be expected from its use as is obtained upon the same type of muscles in the uterus. Dr. Hammond also mentioned irrigation, which he considered preferable to the use of a retention-catheter, keeping in mind the necessity of rigid asepsis.

Dr. Maurice Ostheimer referred to the fact that the retention with overflow in this child had come on directly after an attack of measles, and asked Dr. Burr whether it is not possible that the condition may have been due to some nervous lesion set up by that disease. He also asked whether the measles could not have caused a recrudescence of the old spinal trouble.

Dr. Burr replied that he knew nothing of bladder trouble due to measles. He thought it possible for that disease to light up an old poliomyelitis, although he had never seen this occur; but in that case there would have been an acute paraplegia, which had not been observed in this child.

Dr. Griffith, in closing the discussion, said that he had exhibited the patient for two reasons:—first, because paralysis of the bladder is an exceptional condition in childhood; and, secondly, because of the association of the two conditions in this child. He believed the two to be separate and distinct. He thought that the most satisfactory explanation is that of an original poliomyelitis, followed later by paralytic distention of the bladder due to an entirely distinct cause—probably a neglected cystitis.

A CASE OF MULTIPLE NEURITIS.

Dr. Griffith also exhibited a child with a severe form of paralysis, apparently due to a neuritis that had been consecutive to an attack of scarlet fever, followed by whooping-cough, and then by mumps. He considered it uncertain whether the child had not also had diphtheria, when it had scarlet fever; since, when seen, speech was distinctly involved. The affection of the speech has disappeared; but the paralysis of the body is growing worse, there being decided ataxia with loss of power.

Dr. Theodore Le Boutillier referred to 2 cases of post-diphtheritic paralysis that he had recently seen in the dispensary of St. Christopher's Hospital. It was originally somewhat difficult to determine the cause of the trouble in these cases; but he ultimately learned that the children had had sore throat eight weeks previously, and there was then very little doubt that the cases were diphtheritic paralyses.

Dr. Alfred Hand, in connection with the difficulty of finding the cause of an infectious neuritis, referred to a case that had been sent into the Children's Hospital with a diagnosis of empyema following pneumonia; although exploratory puncture before admission did not show the presence of pus. The child had possibly had pneumonia, but plainly exhibited a marked and widespread neuritis; she was too young to complain of double vision, and fluids did not regurgitate through the nostrils, probably because she was unable to sit up and was fed in the recumbent posture. For a few days the neuritis was looked on as an unusual sequel of pneumonia; but soon afterward several cases of diphtheria developed in the ward; and, in taking routine cultures from the throats of all the patients in the ward, it was found that the throat of the child with neuritis, though normal in appearance, yielded a pure culture of diphtheria bacilli. The source of the neuritis, as well as the cause of the diphtheria-outbreak, at once became evident. On close questioning, the mother then admitted that the child's illness had begun with a sore throat.

In answer to a question by Dr. Burr as to whether the onset in this case had been sudden or gradual, Dr. Griffith said that, so far as could be determined, the disease had come on somewhat slowly. Dr. Burr referred to the fact that the child had marked ataxia, as well as some palsy. He believed the lesion to be spinal, with a slight affection of the peripheral nerves. A point of much interest in such cases is the prognosis; if a patient survive as long as has this boy, recovery is almost certain.

Dr. D. L. Edsall said that he had had a case on the programme of the May meeting under the diagnosis of disseminated encephalomyelitis. In that case the conditions about ten days after the patient had come under the speaker's observation were quite similar to those in the child exhibited by Dr. Griffith. The onset, however, had been distinctly different, in that there had been much more pronounced cerebellar and bulbar symptoms. The disease had appeared after an attack of measles, and the first symptoms had been noted about three weeks after the eruption of that disease. The nervous condition had begun with violent attacks of vertigo, with some disturbance of vision and difficulty in swallowing; also with some disorder of speech—chiefly a thick articulation. When admitted to the Episcopal Hospital, the patient had profound ataxia, with a most striking reeling, drunken gait, of the characteristic cerebellar type; but with comparatively little muscular weakness. After admission, there was progressive increase in the muscular weakness; and, as stated, the condition soon resembled that presented in Dr. Griffith's patient. Dr. Edsall's patient grew progressively worse for about a month, and finally became so extensively paralyzed that he could not raise himself in bed and could do scarcely anything for himself. His condition seemed extremely grave; but improvement began rather gradually. It soon progressed with great rapidity, and the patient was entirely well within two months.

Dr. Burr said that the case was apparently one of diffuse myelitis, with involvement of the posterior ganglia, and affecting mostly the anterior horns and the posterior columns.

CHOREA TREATED BY INTRAVENOUS INJECTIONS OF COLLARGOL.

Dr. Edsall reported a case of chorea of the septic type treated by intravenous injections of collargol, which apparently had a markedly favorable effect upon the temperature and a striking effect upon the child's general condition. The septic appearance of the patient, together with the prostration, rapidly disappeared. The choreiform movements, also, soon improved greatly; although for a week previously the child had been treated with sedatives, salicylates, etc. She ultimately recovered entirely, except for a gravely damaged heart. The speaker also referred to other cases, partly in children and partly in adults, in which he had treated rheumatism, sepsis, typhoid fever, and other conditions with intravenous injections of collargol. He had seen no bad effects, except in one or two instances in which sore arms had been produced by missing the vein and injecting collargol into the subcutaneous tissues. As to the influence of collargol upon the infections in the various cases, he was disposed to be guarded in his statements; but he felt that there had been a favorable influence exerted in a number of cases of septicemia, and that the effects had been sufficiently marked to encourage him in using the preparation further. Dr. Edsall said that one could hardly expect that collargol would have any influence in this case upon the structural changes in the heart. If it had had any effect, this was rather upon the element of infection; that is, it had controlled the bacterial process and had cut short the attacks.

DR. W. E. ROBERTSON said that he had used the ointment of collargol recently, in a case of endo-, myo- and pericarditis, with apparently decided success. He believed that the preparation might wisely be much more widely used. Theoretically, at least, the socalled "inorganic ferments" are indicated in any infectious process; although the only colloidal preparation that has thus far received extended trial is that made from silver—either collargolum, for intravenous use; or the Crede ointment, prepared from the former.

The Blood of Healthy Children. — Karmzki (*Archiv. f. Kinderh.*, 1903, p. 42) examined the blood of twenty infants and forty-two older children, all absolutely healthy and selected with great care. The average number of red corpuscles in infancy (under one year) was 5,583,744, and for the whole of childhood 5,892,000. The greatest number of white corpuscles was found in infancy, the average being 12,628. The average from one to six years was 9,415 and from six to fifteen years, 7,900. In infancy the amount of hemoglobin was approximately constant, about 12.7 gm. to 100 gm. of blood. The average amount of hemoglobin in childhood was 13.5 gm. The average specific gravity for infancy was 1.0566. The average fingers for boys in infancy were 1.2 per thousand greater than in girls. The average for children was 1.060, the average for boys being 2.3 per thousand greater than for girls. He found nucleated red corpuscles in the blood of healthy children only up to the age of seven and one-half months, and then but rarely. The lymphocytes in the blood of healthy children were in general larger than in adults. Up to the fourth year the lymphocytes predominated and on the average exceeded the neutrophiles by about 14 per cent., the lymphocytes being 52.1 per cent., and the neutrophiles 35.4 per cent. Beginning with the fourth year the neutrophiles began to increase. At eight years there were 46.6 per cent. of neutrophiles and 43.6 per cent. of lymphocytes. From the eighth to the fifteenth year the neutrophiles always predominated. At this time the lymphocytes varied between 30 per cent. and 34 per cent. and the neutrophiles between 52 per cent. and 55 per cent.—*Boston Medical and Surgical Journal.*

Current Literature.

PATHOLOGY.

Fisher, Theodore: Some Cases of Dilatation of the Bronchial Tubes after Measles. (*The Lancet*, October 31, 1903, p. 1,225.)

The author discusses the distribution of bronchial dilatation in relation to the cause, local or general, and then reports 5 cases (4 being under three years of age) in which the bronchiectasis occurred in the course of bronchopneumonia complicating measles. When the dilatation of the bronchi is limited to one lung or one lobe, there is usually a definite local cause in the form of an obstruction to the bronchus or one of its main divisions. An enlarged caseous bronchial gland or, more frequently, such a foreign body as a bit of candy, a small nut or bean may be the cause of the obstruction. The cases reported showed at the necropsy more or less marked dilatation of the bronchi widely distributed, along with bronchopneumonic lesions of various stages. In the case of the oldest patient, a boy of fourteen years, who died after having been ill for nine years, the very extraordinary history was given, and apparently verified, that he had gone through five distinct attacks of measles. Each attack of measles occurred when either his friends or brothers and sisters were suffering from the disease, or when measles was prevalent in the school he attended.

Blumer, George: The Relation of the Status Lymphaticus to Sudden Death, Death under Anesthesia, and Infection. (*Johns Hopkins Hospital Bulletin*, October, 1903, p. 270.)

The views set forth are based upon the personal study of 9 cases of sudden death in infancy and childhood, and upon the study of the literature. As to whether it is possible to make a diagnosis of the status lymphaticus before the onset of the attack, which is the immediate cause of death, the author mentions Escherich as stating that such patients usually have a pale, thin skin, a pasty complexion, and a good pad of subcutaneous fat; frequently, signs of rachitis or scrofula are present. The superficial lymph nodes, especially those of the neck and axilla, are enlarged; there are hypertrophy of the tonsils and pharyngeal adenoids, and the spleen is often palpable. Daut adds that a percussible thymus may develop later, and Ewing's work suggests that an increase in the lymphocytes is probably present. Of the clinical symptoms that precede the attack little is known, though the immediate causes of death are probably only two, cardiac paralysis and asphyxia.

Many of the infants found dead in bed, and of those supposed to have been overlain, belong to this class of cases. Most of these cases dying with symptoms of respiratory difficulty may be classed under the head of thymic asthma; percussion usually reveals the enlarged thymus gland. When the attacks of thymic asthma are not so severe, operation has been done, the enlarged thymus removed and the symptoms relieved.

In regard to sudden death during anesthesia in such cases, almost all observers agree that there is cardiac failure; at first it was thought, therefore, that chloroform was especially dangerous, but lately it has been shown that ether is also dangerous in the status lymphaticus. Patients with adenoids and those with goitre seem especially liable to death under anesthesia, if the status lymphaticus is also present. In regard to infections and their course in such cases, Daut found that in a series of patients from Escherich's clinic, over a quarter of the patients dying from diphtheria presented the picture of the status lymphaticus.

The pathology of the condition is broadly a hyperplasia of the thymus and of the lymphatic tissue all over the body. Other lesions are hypoplasia of the vascular system, and in some cases compression of the trachea; there may be a lymphoid condition of the bone marrow, and occasionally an enlarged thyroid gland. Microscopically the lesions are generally hyperplastic, along with slight degenerative changes in the proliferated cells composing the germinal centres. Bacteria do not seem to play any part in the causation of the condition.

After discussing the various theories of the cause of death in this condition, the author gives as conclusions:—

(1) The condition known as status lymphaticus is a definite pathological entity.

(2) It is probably associated with, if not due to, a condition of intermittent lymphotoxemia.

(3) It may be associated with sudden death, probably as a result of lymphotoxemia alone in some cases, or as a result of the action of toxic, physical, or psychical injuries, which are rendered much more powerful than usual by the predisposing action of the lymphotoxemia.

(4) In some cases the sudden death is due to asphyxia from pressure of the enlarged thymus on the trachea.

(5) The subjects of the status lymphaticus can be recognized clinically in some instances.

Schlesinger, E.: Anemia and Leukocytosis in Infantile Atrophy and Gastroenteritis. (*Archiv. f. Kinderhk.*, Vol. xxxvii., p. 321.)

Moderate cases of infantile atrophy are accompanied by anemia with a diminution of red cells below the physiological limit, while the hemoglobin, as a rule, does not fall below. In severe cases concentration of the blood occurs, the specific gravity is high and the number of erythrocytes, as well as the amount of hemoglobin, are apparently, but not really, normal. High specific gravity of the blood is not *per se* indicative of a bad prognosis; but a progressive lowering of the specific gravity with increasing atrophy indicates approaching death. The average number of erythrocytes and amount of hemoglobin, as well as the specific gravity, are higher in gastroenteritis than in simple atrophy, even when the loss of body-weight is the same.

In infantile atrophy hypoleukocytosis is common, unless eczema, bronchitis, etc., causes a mild polyneuclear hyperleukocytosis. Cases of gastroenteritis, on the contrary, are, as a rule, accompanied by hyperleukocytosis the lymphocytes being increased.

Schreiber, E.: A Case of Congenital Malformation of the Heart. (*Virchow's Archiv.*, Vol. clxxiii., p. 387.)

The patient was a boy two and one-half years old, whose symptoms were:—cyanosis, ascites, dyspnea, increased area of cardiac dullness, systolic murmur and accentuated second heart sound. A diagnosis of pulmonary stenosis was made. At the autopsy the heart was found much enlarged, and the pericardial cavity obliterated. The left auricle and ventricle were dilated and hypertrophied, the foramen ovale very large, the ductus arteriosus patent, and the ostium venosum dextrum showed atresia. There was a defect in the ventricular septum and the right ventricle was smaller than normal. The pulmonary artery was relatively small, and its valves badly formed. The lesions are to be attributed to congenital malformation, and not to fetal endocarditis.

Only 12 cases of non-inflammatory atresia of the right ostium venosum have been reported.

The systolic murmur heard during life was caused by the relative insufficiency of the bicuspid valve together with the defect in the auricular and ventricular septa.

MEDICINE.

Osler, William: Two Cases of Cirrhosis of the Liver in Children. (*Johns Hopkins Hospital Bulletin*, November, 1903, p. 322.)

The cases were presented before the March meeting of the Johns Hopkins Hospital Medical Society. With regard to the family history of the first patient, seven years old, the mother had had numerous miscarriages. The previous personal history was negative. Examination revealed nothing in the face, teeth or conformation of the head suggesting syphilis. About six weeks before the report the abdomen became enlarged and hard. The vertical liver dullness extended fully ten inches, and the liver could be felt as a smooth, hard mass filling the upper section of the abdomen, the lower edge being sharply defined as far down as the navel. The edge of the enlarged spleen, also, could be felt. There was some distention of the superficial veins; there was no glandular enlargement, no ascites, nor any swelling of the feet.

In discussing the case Dr. Osler said that among the conditions with which enlargement of the liver is associated in children were any form of malnutrition, especially rickets and syphilis; such cases are numerous. Cases of enlargement, due to cirrhosis, are rare in this country and in Europe, but the Anglo-Indian physicians report numerous cases which are attributed by some to the absorption of imperfect products of digestion. In a large proportion of cases of cirrhotic liver in children there is enlargement, but no ascites until late, and very rarely jaundice.

The second case, a lad of thirteen years, had a negative family and previous personal history. Within the past year he had occasionally taken a few glasses of beer. The boy had not been in very good health for a few months; but the enlargement of the abdomen had come on suddenly a few days before admission, about three weeks before this report. Since coming under observation the abdomen had continued to increase, and had become tense and covered with large distended veins, in which the current was upward; there was ascites. Tuberculosis of the peritoneum was suspected; but, on account of slight fever, the tuberculin test was not available. The distended veins suggested an atrophic cirrhosis with ascites. Respiration had become difficult, owing in part to the ascites; so that the abdomen was opened and drained. The liver was found atrophic and cirrhotic.

Carpenter, George: Case of Syphilitic Nephritis in an Infant Aged Five Months. (*British Medical Journal,* September 12, 1903.)

The infant was born one month premature of syphilitic parents. At two months of age it had "snuffles" and began to waste; shortly afterward a red rash appeared on the buttocks and feet. The rash faded and left behind it merely copper-colored macules on the chin and buttocks, and glistening palms. The baby came under the author's personal observation when five months old, and at that time was small, anemic, with scanty hair, eyebrows and eyelashes. The face was puffy under the eyes and "snuffles" was a marked feature. Heart, lungs, liver and spleen negative. The urine was scant, acid and its specific gravity was 1,006; it contained albumin to one-fourth its volume. Antisyphilitic treatment was instituted and in a few days the rash was fading: one week after admission to the hospital the quantity of urine passed in twenty-four hours was 3 ounces. The urine had a specific gravity of 1,006 with albumin five-twelfths by volume, and urea estimated at one and two-third grains to the ounce. The sediment obtained by centrifuge contained numerous small and large hyalin casts, epithelial casts, red cells, hyalin casts with epithelial and red cells upon them, a few granular casts, detritus of renal epithelium and crystals of sodium and ammonium urate.

Three weeks after entry there was general dropsy and some waxy casts had been found in the urine, whose general characters remained the same. The infant died four and a half weeks after admission. The necropsy showed the heart, lungs and spleen to be normal; the liver was "toughened" and there were no gross pathological changes in the kidneys. Under the microscope the kidneys showed dilatation of the cortical tubules and thickening of the glomerular capsules, with an excess of round cells in the glomeruli; the arterioles near the glomeruli were thickened and their lumina narrowed. Casts were seen in the tubules. The case was regarded as one of syphilitic catarrhal nephritis.

Borland, Hugh Howie: Infantile Acute Eczema; Hematemesis; Duodenal Ulcer; Death. (*The Lancet*, October 17, 1903, p. 1,084)

This unique condition of duodenal ulcer following acute eczema occurred in an infant of eight months. Eczema capitis began when the infant was two months old and persisted in moderate severity until about a week before death. Then there was an exacerbation of the eczema, which was intense, affecting the head, face, neck and part of the trunk. There was much edema of the face and a great number of vesicles and pustules formed. On the fourth day after the exacerbation began the infant vomited blood, and from this time on the stools were tarry. During the next two days there was severe retching and some vomiting of blood, together with evidences of acute abdominal pain; and the baby died after vomiting a single mouthful of bright red blood.

The necropsy revealed a few ounces of bloody serum in the peritoneum, but no evidence of peritonitis. The lesser sac of the peritoneum contained a clot filling practically the entire space. On the posterior wall of the duodenum just below the pylorus was found a round ulcer with punched out edges; the perforation was about the size of a split pea and directed toward the lesser sac. The stomach contained altered blood and its mucous membrane was merely congested.

In commenting upon the case the author calls attention to the analogous occurrence of such duodenal ulcers in cases of burns on the skin, particularly in young subjects.

Broadbent, Walter: Case of Congenital Heart Lesion. (*The Lancet*, November 14, 1903, p. 1,358.)

The case reported is interesting as illustrating various points in the clinical history of congenital malformation of the heart. It has some bearing also on the question of the pulmonic systolic murmur; nothing is more common than a systolic murmur over the pulmonary artery, while actual stenosis of the orifice is extremely rare.

The patient, a girl, aged thirteen years, was brought by her mother for feverishness and diarrhea. The child was well nourished, but was of a deep blue color about the cheeks and the lips; this the mother had noticed for the last seven years, and had been told that it was due to congenital heart mischief. There were also patches of deep freckle-colored staining on the cheeks. The ends of the fingers were clubbed. A chain of much enlarged glands ran down each side of the neck. The pulse was 80 and not quite regular; the artery was of normal size and easily compressible. Slight pulsation was visible in the second and third spaces, just to the left of the sternum. There was cardiac dullness in the second space for three-quarters of an inch from the sternum and down to the fifth space, where it extended from three-quarters of an inch to the right of the sternum to half an inch outside the left vertical nipple line. At the apex and over the tricuspid area a first sound and loud second sound were heard, and over the pulmonic area a first sound, high-pitched, blowing systolic murmur, and a much accentuated and reduplicated second sound. The systolic murmur was heard down the sternum to the fourth rib and for two inches to the left, and was not appreciably affected by her taking a deep breath. At the aortic cartilage a first sound and loud second sound were heard. Movement of the left side of the chest in front was not quite so good as of the right, and resonance at the left apex was rather higher pitched. The air entry was diminished, but there were no crepitations. Patient was very short of breath on the slightest exertion. The abdomen was distended and tender, especially below the umbilicus. A large gland could be felt in the left iliac region. There was also shifting dullness in the flanks and for an inch above the pubes, but no fluid thrill was obtained. The temperature was 99° F., but rose to 100.5° F. in the evening.

When in bed the girl's face lost its blue color and was a deep red. Her temperature varied between 98° and 101° F. She was kept in bed and treated for the peritonitis. After six weeks the temperature was rarely above 99° F. The abdomen was no longer distended or tender and the fluid had disappeared. The enlarged glands in the neck and abdomen were smaller. Also the systolic murmur in the pulmonic area was distinctly less loud. Two weeks later, when allowed up for an hour a day, she did not become blue, and a month later still she was up all day and able to take more exercise than ever before, without becoming at all blue, though she was soon short of breath on running. The pulse was regular, the systolic murmur was still present, but much less loud and almost obliterated by deep inspiration, and the pulmonic second sound was only slightly accentuated, but still reduplicated.

The diagnosis of the heart lesion presents points of interest owing to the unexpected non-appearance of the blueness. A systolic murmur, which may be exceedingly loud, at and to the left of the pulmonic region accompanied by an accentuated second sound is often due to the lung not covering the conus arteriosus and the pulmonary artery, which will then lie against the under surface of the ribs. Vibrations are thus produced which are readily conducted by the chest wall. This murmur often varies with position, and is usually considerably modified by the patient taking a deep breath and bringing a cushion of lung between the artery and the chest wall; it may indeed completely disappear even when very loud. A systolic murmur accompanied by a loud second sound, whether aortic or pulmonic, is obviously not due to stenosis, and there can have been in this case no constriction at the pulmonic orifice, since the second sound would have been obliterated and not accentuated. The systolic murmur might have been caused in this child by patency of the ductus arteriosus and the accentuated and reduplicated second sound by a partial blocking of the pulmonary blood stream when the aortic blood entered the pulmonary artery, but a patent ductus arteriosus could not alone have produced the blueness, though its obliteration during the quiet of the long rest in bed would have explained the practical disappearance of the murmur. Or narrowing of the pulmonary artery at the point of entrance of the ductus arteriosus might have caused the systolic murmur with accentuated second sound and the blueness from deficient aeration of the blood, but rest in bed could not have had any curative effect and such a narrowing is exceedingly rare.

Patency of the foramen ovale causes no murmur, but this or pulmonic valvular stenosis is present in apparently all congenital cardiac defects accompanied by cyanosis. Patent foramen ovale may cause no symptoms at all until some disease of the lungs, such as bronchitis, raises the pressure on the right side of the heart and then cyanosis occurs unexpectedly early because blood from the right auricle flows into the left. This seems to explain the above case. When first seen the child had a dilated right ventricle, as evidenced by the cardiac dullness to the right of the lower sternum. Either old damage to the upper lobe of the left lung or enlarged mediastinal glands had caused obstruction to the pulmonary circulation. The prolonged rest in bed enabled the right ventricle to recover and to take the pressure off the right auricle, so that blood ceased to pass into the left auricle and perhaps the foramen ovale became smaller. The murmur may have been due to the want of expansion of the left lung uncovering the pulmonary artery, or possibly there was some patency of the ductus arteriosus as well as of the foramen ovale.

SURGERY.

Ilott, H. J.: A Case of Chondroma Attached to the Submaxillary Salivary Gland. (*The Lancet*, November 14, 1903, p. 1,360.)

A tall, rather anemic girl, sixteen years of age, was admitted into Bromley (Kent) Cottage Hospital on July 28th. She had a hard, movable, nodular growth in the right submaxillary region. It had been slowly developing for the past seven or eight years. It was then of about the size of a large walnut. The growth was removed by the author on August 4th. It was situated beneath the deep fascia, was encapsuled, and by its base was adherent to the submaxillary salivary gland. On section the growth was firm and white, with a few small yellowish-brown patches of somewhat softer consistence. It was sent to the Clinical Research Association for examination and Mr. J. H. Targett reported as follows:—"This tumor is a chondroma of the submaxillary salivary gland. It is well encapsuled and shows no signs of malignancy. There is much imperfect gland-tissue mixed with the cartilage. It is now usually regarded as an endothelioma." The wound healed quickly and the patient was discharged on August 13th. These growths have been noticed in connection with the parotid glands, but they are rare; and the author had not known of any such tumor in connection with the submaxillary gland.

Murphy, Fred T.: Pneumothorax Associated with Fracture of the Ribs. Case Treated by Puncture of Chest. (*Boston Medical and Surgical Journal*, October 29, 1903.)

A boy, nine years old, was brought to the hospital shortly after being thrown from his bicycle; it was not known whether he had been run over. Examination showed a strong boy in poor condition. Color was bad; the respiration rapid, thirty-five to the minute and labored; pulse 135. Both sides of the neck and the left back were markedly emphysematous. The chest was resonant all over, but on the left there was absence of breathing and fremitus. The belly was not remarkable, and there were no marks of injury except to the chest. In fact there was no definite fracture of the rib, only a marked tenderness on the left under the emphysema.

As the condition was rapidly becoming extreme no further examination was made, but a large trocar was inserted on the left at the angle of the scapula. A rush of air followed the insertion, and the dyspnea was immediately relieved and the cyanosis disappeared.

The child announced that he no longer felt as if he was suffocating. After the first escape of air considerable blood ran out. The trocar was kept in for five minutes, during which time the lung had expanded over the upper three-quarters of the chest. The chest was immobilized and $^1/_{12}$ grain of morphia given subcutaneously and the child sent to the ward. As far as symptoms and treatment went he might as well have been sent home. On the second day there was a rise in the temperature of two degrees, but not once did he complain of pain or dyspnea. All but a trace of the emphysema and pneumothorax had disappeared by the fourth day.

Experience has proven that interference is rarely necessary to relieve the intrapleural pressure after fracture of the ribs. In the type of case illustrated by the above report it certainly gives relief, and may be a life-saving measure.

Bichat, Henri, and Goepfert, René: Latent Tubercular Peritonitis of the Ileocecal Region; Acute Intestinal Obstruction by a Bending of the Small Intestine; Laparotomy; Cure. (*Annales de Méd. et Chirurgie Infant.*, November 1, 1903, p. 721.)

A little girl, eight years old, entered the hospital with a history of anorexia, some pain between the scapulæ and loss of flesh and strength; she had had these symptoms one month previous to her entrance. There was soft, blowing expiration between the scapulæ; otherwise no abnormality. The child was bright and ate well for three days. On the fourth day she became somewhat languid, and in the middle of the same night was seized with violent pains over the entire abdomen, followed by intermittent vomiting and great restlessness. The condition became rapidly worse, and in ten hours the temperature was 36°C., pulse 180 and almost imperceptible. The vomiting continued of a bilious character, the abdomen was distended; tenderness localized in the right iliac fossa with muscular resistance. The peristaltic action of the intestine could be seen at the lower part of the abdomen. The diagnosis of intestinal obstruction was made; ice was applied but, the general condition being very low, laparotomy was performed. A small amount of ascitic fluid escaped on incision. In the right iliac fossa, a large, firm, immovable mass, made up of the cecum, the appendix and the end of the ileum, was found adherent to the fossa and surrounded by fibrous tissue. The mesenteric glands were much enlarged, and a fibrous band was seen connecting two loops of small intestine near the end of the ileum. This band was cut, the intestine regained its natural size and the abdomen was closed. Improvement was rapid, the mass in the right fossa perceptibly diminished, and recovery followed without incident. The absence of fever, generalized pains and the intermittent contraction of the intestine, pointed to the diagnosis of an obstruction. The presence, after anesthesia, of a large irregular mass in the right iliac fossa, painless and giving no sign of its gradual obstruction, pointed to a tubercular condition. The diagnosis could not, however, be positively made until the lesions were seen.

Saint Jacques, E., et Parigian, L.: Cancer of the Intestine in Early Life. (*L'Union Méd. du Canada*, September, 1903, p. 509.)

A deaf-mute, eleven years old, was brought to the hospital with the symptoms of uncontrollable vomiting, distention of the abdomen, and abdominal pain. There was no previous history of importance, the above symptoms coming on suddenly. On examination there was neither resistance nor localized tenderness. For three days the vomiting continued and the obstruction did not yield to purgatives or enemata. Laparotomy, therefore, became urgent. On opening the abdomen the obstruction was found to be localized in the left iliac fossa; there was a hard mass which included the mesentery and four or five inches of intestine, immovable and adherent. The intestine was resected for the length of about three inches, and a Murphy button was inserted. The child did not recover from the operative shock and died in the night. Microscopic examination showed a typical adeno-carcinoma. Two points should be noted:—(1) The age of the patient. (2) The complete absence of premonitory symptoms.

HYGIENE AND THERAPEUTICS.

Billings, J. S., Jr.: The Administration of Diphtheria-Antitoxin by the New York Department of Health During 1902. (*New York and Philadelphia Medical Journal*, December 12, 1903, p. 1,117.)

Antitoxin has been administered in diphtheria by the New York Board of Health since 1895. Previously the diphtheria death rate had ranged between 16.7 and 11 per 10,000; and the case mortality from 64 per cent. to 44 per cent. With the introduction of antitoxin a marked improvement took place and was progressive until 1898. Up to 1899 a special corps of inspectors was maintained, whose duty it was to administer antitoxin free of charge in cases of diphtheria, and to immunize all persons exposed to infection. Early in 1899 this corps was abolished; but in 1902, the death rate and mortality having risen markedly it was determined to do everything possible to lessen the prevalence of diphtheria, to prevent its occurrence in persons exposed, and to cure those attacked. To these ends a corps of eight special inspectors was organized, each inspector being a man thoroughly trained in intubation and extubation. Curative and immunizing injections, if needed, were given in each reported case, and intubation was performed when indicated. Physicians were notified by means of circulars of the formation of this corps of diphtheria inspectors anxious to cooperate in such cases; and were urged to use antitoxin especially for purposes of immunization. The results were most satisfactory. Between 1888 and 1894 the case mortality ranged between 64 to 44 per cent. (average 37 per cent.), and the death rate per 10,000 between 16.7 and 11.0 (average 13.9). During four years, 1895 to 1898, the case mortality dropped to 12 per cent. and the death rate to 4.6. Since 1898 both the case mortality and the death rate have risen; in 1901 the mortality was 15.9 per cent., and the death rate 5.8; in 1902 the case mortality was 10.9 per cent. and the death rate 5.34 per 10,000.

Dr. Billings gives as his conclusion that there is no longer any doubt of the curative action of antitoxin in diphtheria. Of 15,792 cases injected with free antitoxin 1,860 died, a case mortality of 11.8 per cent. If the cases moribund when injected (722 in number) are deducted, the case mortality is further reduced to 7.5 per cent. The one important fact brought out in this report is the almost imperative necessity of giving the antitoxin at the earliest possible moment. Of 1,702 cases injected on the first day of the disease (including moribund cases) only 85 died, a case mortality of 4.9 per cent.

Rommel: On Buttermilk. (*Archiv. f. Kinderhk.*, Vol. xxxvii., p. 252.)

In acute as well as in chronic gastrointestinal diseases buttermilk is a surprisingly certain therapeutic dieteticum. Its value lies in the small amount of fat it contains, in the fine distribution of the casein, brought about mechanically by the churning process, and in the presence of lactic acid, which prevents abnormal fermentation, protects the casein from decomposition and also has a peptonizing action.

Buttermilk is not possible as an exclusive and permanent diet, because of its effects in mineral metabolism, especially on the calcium-balance. For prolonged use it is necessary to increase the fats and diminish the addition of sugar.

Schwab and Lévy-Bing: The Treatment of Syphilis in the Newly-born by Means of Mercurial Injections. (*La Presse Méd.*, October 31, 1903, p. 757)

Five newly-born syphilitic infants were treated by means of intramuscular injections of biniodid of mercury in water, in doses of 1 to 2 milligrams per day. The injections were well borne. No local reaction followed in any case. Improvement in the syphilitic symptoms was marked and rapid, cure being complete in from ten days to one month.

The method has the advantage of saving the gastrointestinal tract, producing an intense mercurialization, and of being more sure than friction treatment, which is very unequal in its effects.

Weill-Lumière et Péhu: Sterilized Solution of Gelatin in Infantile Diarrhea. (*La Pédiat. Prat.*, September 15, 1903, p. 118.)

Interesting results are here published in regard to the use of gelatin, given with the feedings, in cases of gastroenteritis. The gelatin must be absolutely pure, it being an excellent medium for all kinds of bacteria; the commercial gelatin is often contaminated with the spores of tetanus bacilli. One gram of gelatin in $^1/_{10}$ per cent. solution is given with each bottle, about 6-8 grams in the day. As much as 12-14 grams can be given until the diarrhea stops and there is complete change in the character of the stools—in such cases the dose is increased 1 gram per day. The authors state that by this method the stools diminish in number, have more consistency, and quickly regain their normal type, and the constitutional symptoms disappear. Occasionally the cure is but temporary. This treatment succeeds best in cases of simple gastroenteritis. It has no effect on complications or severe general symptoms. The probability is that gelatin effects a cure purely by mechanical means. It neutralizes the acids and salts by a physical isolation.

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Original Communications.

A CLINICAL STUDY OF SIXTY-TWO CASES OF INTESTINAL INFECTION BY THE BACILLUS DYSENTERIÆ (SHIGA) IN INFANTS.*

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It is necessary to emphasize at the outset that this study is entirely clinical. The bacillus dysenteriæ, first proved to be the cause of Japanese dysentery by Shiga, and later to be responsible for the disease in Manila, the United States, Germany and other countries, is now universally regarded as one of the etiological factors in adult dysentery.

Duval and Bassett in 1902, working under Flexner's direction, isolated the bacillus of Shiga from the stools of infants suffering from summer diarrhea. Their results have been confirmed by many other investigators, and infection with the bacillus dysenteriæ is now believed to be the rule in a large proportion of all forms of the diarrheas of infancy, both in the winter and in the summer.

It is not our intention to discuss the cause of diarrhea in infants, or the bacteriology or pathology of this condition. This clinical study was a part of the investigation carried on during the past summer by the Rockefeller Institute for Medical Research and was intended to deal with the symptoms observed in those cases in whose stools the bacillus dysenteriæ was found.

The cases that make up the material for this study were all observed by the writers at the Vanderbilt Clinic during the months of July, August and September, 1903. The patients were brought to the dispensary, which is an outpatient service, and the milder cases were seen only every alternate day. The severe cases were, in addition, visited and treated at their homes on the days that they did not come to the clinic by Drs. Peter Irving and Frank Erdwurm, whose efficient co-operation made full reports possible. To insure uniform records use was made of printed blanks upon which could be recorded the history, physical examinations and daily observations of each case.

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* Read before the Pediatric Section of the New York Academy of Medicine, February 11, 1904.

When a child was brought with a history of diarrhea, effort was made at the time of the first visit to obtain a fresh stool for immediate bacteriological examination. By using the thermometer by rectum or inserting a suppository it was possible in most cases to obtain a stool. The stool was passed into a sterile piece of unbleached cotton, then taken at once to the bacteriologists, Drs. Duval and Schorer, working in the same building. In forty-eight hours a bacteriological report on the presence or absence of the dysentery bacillus could be obtained.

At first only those cases were examined bacteriologically that gave the history or presented symptoms of a moderately severe diarrhea; but later, on account of the numerous positive findings, all cases of mild diarrhea and intestinal indigestion were also examined. This makes our report of far greater interest, our cases being successive ones and no selection at all having been attempted after the first 4 cases, while other cases that have been published up to this time have been those selected for their severity, or for some reason regarded as suitable and likely to contain the bacillus of dysentery. One small series examined seriatim has been reported and will be commented upon later.

Some patients were seen but once; in others, though seen several times, the result of the disease was unknown. Undoubtedly some of these cases recovered so that they were not brought back to the clinic; others refused to return after the first injection of the serum.

As routine measures, cow's milk was immediately discontinued and not resumed for several days; in breast-fed infants the nursing was forbidden for a time. Barley water, rice water or broth was substituted for the milk. Free catharsis was obtained by means of calomel and castor oil. Other drugs were rarely used.

There were in all 62 cases of infection with the bacillus dysenteriæ (Shiga); of these 2 were observed during June, 33 in July, 18 in August and 9 in September. The investigation was begun late in June and ended September 15th, so that only during July and August were observations carried throughout the whole of the month; hence, the small number of cases reported in the first and last months, June and September, has little significance.

AGE.—Eight of the patients were under three months; 14 were between three and six months; 15 were between six and nine months; 9 were between nine and twelve months, and 15 were over one year; of 1 the age was not stated.

Of the 8 patients under three months of age, 5 were only slightly sick; 1 moderately, and 2 severely sick.

Of the 14 patients between three and six months, 7 were mild infections; 4 moderately severe; 2 severe, and 1 patient was only seen once.

Of the 15 between six and nine months, 3 were mild cases; 9 were moderately severe, and 3 severe.

Of the 9 between nine and twelve months, 5 were moderately severe and 4 severe cases.

Of the 15 over twelve months, 1 was a mild case; 11 were moderate cases and 3 severe cases.

From an analysis of these cases it would appear that the number of moderately severe and severe cases increases proportionately with the increase in age. This is explained, however, by the fact that a majority of the mild cases under six months of age in this series were breast-fed.

PREVIOUS ILLNESS.—An attempt was made to learn if the patient had previously suffered from diarrhea and by reason of this was more susceptible to infection with the bacillus dysenteriæ. The statements were so unreliable that no conclusions could be drawn. No other predisposing cause in the way of disease could be discovered.

CHARACTER OF FOOD.—Of the 14 severe cases, 1 was breast-fed; 5 were given condensed milk; 2 Straus' sterilized milk; 2 grocer's milk; 3 fairly clean bottled milk, and 1 case not stated.

There were 14 children entirely breast-fed, 2 children were partly breast-fed; 11 children had been fed on grocery milk; 7 on bottled milk of fair quality; 8 were fed partly or wholly on sweetened or unsweetened condensed milk; 5 on proprietary foods without milk; 2 on Straus' sterilized milk; 2 on home sterilized milk; 1 on peptonized milk; 4 on general diet and no statement in regard to 7 (counted twice 1).

LENGTH OF SYMPTOMS BEFORE OBSERVATION.

Symptoms had existed for	1 day	in	5	cases
" " " "	2 days	"	7	"
" " " "	3 "	"	8	"
" " " "	4 "	"	5	"
" " " "	5-10 "	"	17	"
" " " "	11-14 "	"	7	"
" " " "	1-3 months	"	10	"
	No statement	"	3	"

Forty of the cases had given symptoms for one week or less showing that they were brought while they were still acutely ill.

LENGTH OF TIME UNDER OBSERVATION.

1 - 3 days	28
4 - 7 "	12
8-14 "	10
2 weeks and over	8
No record (seen only once)	4

CONDITION AT THE BEGINNING OF ATTACK.—Of the 62 cases whose condition at the beginning of the attack was noted, 31 were well nourished; 2 fairly nourished; 11 poorly nourished; 13 were emaciated, weak and in wretched condition; 2 were in collapse and practically moribund on the first examination.

It is most interesting and instructive to notice in this connection that of the 31 children who were well nourished, 14 had a very mild form of disease, 12 were moderately ill and only 5 severely ill; of the 2 fairly nourished, 1 was very slightly and the other severely ill; of the 11 poorly nourished, 7 were moderately, 3 severely and only 1 slightly ill. Of the 13 emaciated, 3 were severely ill, 10 moderately, and not one had the disease in a mild form. From this it would seem that the most important factor in determining the character and severity of the disease is the previous condition of the child.

Of the cases observed by us 16 were very mild, 31 were moderately severe and 14 were severe; 1 case was lost sight of and so was unclassified. We characterized as mild those cases that had more frequent passages than normal, but not more than 10 a day, with a temperature of less than 100.5°F. These stools contained undigested food, usually mucus but no blood (such cases were not really sick). Those cases were classified as moderate that had a temperature over 100.5° F. or had frequent passages containing mucus and sometimes, a slight amount of blood. These cases were really sick and showed constitutional symptoms. The severe cases comprised those having marked constitutional symptoms and great depression with frequent mucous stools, often with much blood, and, while the temperature of these cases was usually considerably elevated, many of them and some of the most severe ran an almost afebrile course.

Thirty-four cases did not show a temperature of over 100-½ and thus more than one-half of those seen by us were practically without fever. Vomiting occurred in 19 cases, usually at the beginning of the attack.

The number of stools in 24 hours was from 2 to 5 in 5 cases
“ “ “ “ “ “ “ “ “ 5 “ 10 “ 35 “
“ “ “ “ “ “ “ “ over 10 “ 20 “
In 2 cases not stated.

Two cases had stools without any mucus; mucus was present in all other cases in varying quantity from a minute amount to practically the whole stool. Blood was present in 17 cases; the quantity of blood varied from a few streaks to enough to color all the mucus; no clots of blood were ever observed.

THE FOLLOWING CASES ARE CITED AS REPRESENTING TYPES OF THE DIFFERENT DEGREES OF SEVERITY:—

Mild. (Breast-fed infant) P. B., five months old, nursed entirely, every three hours. Had never been ill and his condition at the beginning of the attack was good. His illness began two days previously with three green mucous stools per day. No fever, no vomiting, no blood in the stools. Physical examination was negative. He was rather restless, but otherwise seemed perfectly well and had a temperature of only 100° F. The stool seen at the dispensary was green, moderately large, semi-liquid with mucus, no blood. Breast-feeding was ordered discontinued and barley water feedings substituted; small doses of calomel were given. The following day the condition was the same, character of stools unchanged and the same number. The following day the stools were two in number, yellow, fecal, with only a little mucus and everything seemed so satisfactory that breast-feeding was resumed with an absolutely uninterrupted convalescence.

Such a case would formerly have been considered a very mild case of intestinal indigestion; but the bacteriological examination showed the presence of the acid producing* type of dysentery organism.

Mild. (Bottle-fed infant) W. P., six months old, in good general condition. Never had the breast, bottle-fed from birth; at present being fed a mixture of malted milk 3 teaspoonfuls, and water 1 pint; of this 5 ounces were given every two or three hours. Illness began three days previously with loose, mucous stools, averaging ten a day, no blood, no vomiting. Temperature 100½°F. Did not seem ill. Acid type of organism cultivated from stools. Patient was under observation six days. Child was given calomel and shortly after a dilute milk modification. After treatment was begun the stools were never more than four a day, were yellow and fecal but had mucus and a few curds. These disappeared and the child was discharged entirely well.

Moderately severe, R. W., five months old. Was nursed for four months, afterwards fed on three parts Straus' milk and two parts barley water, taking only 15 ounces of the mixture in twenty-four hours. The baby was in good general condition when taken sick two weeks before being brought to clinic; the onset had been with vomiting and fever; there had been marked loss of flesh and baby was markedly prostrated when first seen. The stools were five to seven a day, large, green with considerable mucus and some blood. Temperature 100° to 101° F. The acid type of organism was cultivated from the stools. The patient was under observation nine days; was given calomel and the milk was stopped two days; then a weak milk modification given. The stools became less frequent, their character improved, and on the last day seen were only two in number, yellow and with some mucus. The temperature was normal.

Severe, M. K., seven months. Had been under observation for six months, at the beginning of which time he weighed 4 pounds 15 ounces. Had been fed on various milk modifications and had gained very well; at the time of the attack was of fair weight and in good general condition. For about ten days had suffered from symptoms of intestinal indigestion. The stools were yellow, frothy and large, and there were ten to twelve in twenty-four hours. There was some tenesmus and mucus in great amount; no blood. Free catharsis and the substitution of barley water for the milk had no effect; stools were still frequent and yellow and once contained a little blood. The true Shiga type of organism was found by culture from the stools. The temperature was always low never going above 100.4°F. Imperial Granum was no better borne than the barley. The child constantly failed and the stools were still frequent, as many as sixteen in a day; bismuth only colored the stools. In a week the child was in desperate straits, eyes sunken, fontanel depressed and pulse imperceptible. He was given 20 cc. of Shiga serum in the buttocks on two successive days. Stimulation by whiskey, strychnin and hot baths was resorted to. Child was also given a milk and water mixture, 1-6. Very decided improvement was seen almost immediately, the number of stools diminishing in one day from sixteen to four; this was three days after the first injection of serum. From this time convalescence was rapid and three months after the attack he is a fat, well-nourished child, taking milk well and digesting it.

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* The acid producing type, *i. e.*, the one that splits mannite with the formation of acid, is also known as the "Flexner-Manila" or "Harris" organism. The other type that does not split mannite is known as the true Shiga or alkaline organism.

FATAL CASES.—To our knowledge there were 4 fatal cases. It is possible that some others of the cases observed died, but not while under observation, nor were any in a moribund condition when last seen.

(1) J. C., ten months old, in poor condition and emaciated; living in a tenement in fair surroundings, but badly cared for; was taken with diarrhea while being fed on a weak barley-water and milk mixture. No history of previous illness, and he had been bottle-fed for eight months. The onset was without vomiting, but with moderate fever and with frequent mucous stools, eight a day, no blood. When first seen on the second day of the attack the baby was markedly anemic; fontanel depressed; heart very feeble; circulation poor; extremities cold; no distention. Lungs negative. Very restless. Milk stopped and barley water given and white of egg with whiskey. Temperature 101.8°F. Stools were small and green muco-purulent with streaks of blood. Following day child was extremely prostrated, temperature 101°F.; edema of face and lower extremities; respiration shallow, radial pulse imperceptible. Death thirty-six hours later.

The true Shiga type of dysentery organism was separated from the stools on the first day of observation.

(2) G. H., ten months old, in fair condition, living in a filthy tenement, with little sunlight and poor care; was taken sick while being fed a condensed milk mixture. He had been nursed until

three months old. The onset was acute by vomiting, high fever, 103½°F., and diarrhea; stools were six to seven a day and contained mucus, no blood. When first seen, four days after the beginning of the attack, the child was somewhat emaciated; fontanel not sunken; temperature 103°F.; very restless and with some tenesmus. Put on barley water and following catharsis was given a bismuth mixture. On the seventh day of the attack was given 10 cc. of Harris serum, and these injections were repeated on the eighth and ninth days. By the fourteenth day the general condition was somewhat improved, the temperature having fallen to 100°F., pulse still rapid. The diarrhea had much diminished so that there were only two or three yellow fecal stools a day. A weak milk mixture was given with no bad effect upon the intestinal condition, but the child gradually failed, and in spite of stimulation by whiskey and strychnia the extremities became cold; edema came on and the heart gradually gave out four weeks after the beginning of his attack. The mother was densely ignorant and failed to carry out directions, especially in regard to feeding; moreover, she refused to have the child admitted to a hospital. The Harris, or acid, type of organism was separated from the stools on the first day of observation.

(3) A. K., three months old, fairly nourished, living in a clean tenement but with little care. Had been nursed entirely for one month. Was taken sick while being fed on Straus' sterilized milk. The onset was sudden with fever and diarrhea, no vomiting. Stools were mucous but contained no blood, twelve a day; there was much tenesmus. First seen seven days after the beginning of the attack; the child was anemic and in collapse. Fontanel depressed. Heart normal; lungs—fine râles at both bases behind. Child was admitted to the Babies' Hospital four days later and was given, along with other treatment, 10 cc. of Harris serum. Refused food and later regurgitated after feeding. Temperature remained between 103° and 105° F., and the child died forty-eight hours later. The stools had diminished to four a day.

The Harris, or acid, type of organism was separated from the stools on the first day of observation.

(4) M. McK., seven weeks old, a poorly nourished child, living in a dirty tenement with very poor care. Was taken sick with diarrhea while being fed on condensed milk and Eskay's food. The baby had been nursed for three weeks, but nursing had then been stopped because the mother developed an abscess of the

breast. The onset was acute with vomiting, but no fever. The stools were five to seven in twenty-four hours; green, mucous and offensive, but contained no blood. When first seen, seven days after the beginning of the attack, the child was much prostrated and anemic, temperature 100°F., and pulse 100 and weak, cold extremities and restless. After catharsis was fed on barley water, stools remained the same; refused food and in spite of stimulation and 10 cc. of Harris serum the baby died four days later after having been in collapse for twenty-four hours.

Of the fatal cases all were under one year of age; all were artificially fed and were in very poor condition when first observed; and, also, they had only the poorest care and attention.

BREAST-FED CASES.—There were fourteen infants exclusively breast-fed that suffered from infection with the bacillus dysenteriæ.

(1) L. P., six weeks old, good general condition. Stools four to eight a day, watery, with slight amount of mucus, no blood. Five days after the beginning of the attack cathartics given and substitution of barley water for nursing; in twenty-four hours stools became fecal and the mucus disappeared. Never any vomiting or fever. The "acid" type of organism was isolated.

(2) F. A., six weeks old, good general condition. Diarrhea and vomiting. Stools soft and yellow with some mucus, seven in twenty-four hours. Seen only once. The acid type of organism was isolated.

(3) P. B., five months old, good general condition. Onset without vomiting or fever. Three green mucous stools daily. After calomel and withholding the breast the stools became yellow and fecal, two a day, and on the third day of treatment and the fifth of the disease the child was discharged perfectly well. The acid type of organism was separated from the stools.

(4) C. F., two and one-half months old, in good condition at the beginning of the attack. Onset with high fever, very frequent green, fluid stools with curds and much mucus, no blood, fifteen a day. Temperature 104°F. The acid type of organism found. Referred to hospital but did not go. Seen only once.

(5) D. M., four months old, in good general condition; three to five green and mucous stools, no blood; diarrhea began two days before coming under observation. No vomiting or fever; child not at all sick but the stools contained a little undigested milk and were green for four or five days. On the fourth and fifth days of treat-

ment 10 cc. of Shiga serum injected. Two days after this the stools became yellow and fecal and the breast-feeding, temporarily withheld, was resumed. The true Shiga bacilli were found in the stools.

(6) N. H., eight weeks old, good general condition. Diarrhea with six to eight fluid, mucous stools had begun two days before coming under observation. No fever or vomiting. Castor oil and barley water were followed by prompt recovery in two days. The acid type of organism was found.

(7) W. R., eight weeks old, in good general condition. Diarrhea with fluid; mucous stools began without fever or vomiting two days before coming under observation. The exhibition of castor oil and barley water was followed by recovery on the fifth day of the attack. True Shiga organisms found in stools.

(8) C. J., three months old, in good general condition. Diarrhea began without fever or vomiting, three days before coming under observation; stools eight to ten, fluid and mucus, no blood. Castor oil and barley water effected a rapid cure in two days. The acid type of organism was isolated.

(9) L. G., thirteen months old, fair general condition. Onset acute with fever one week before coming under observation, no vomiting. Stools had been six to eight a day fluid and mucous, no blood, and child had lost much weight. Temperature 101.8°F. Calomel and barley water given. Case seen only once. The acid type of organism was isolated.

(10) J. D., one year old, good general condition. The attack of diarrhea began with vomiting and fever; stools four to nine in twenty-four hours, loose, mucous, with slight amount of blood. When seen one week after beginning of attack, temperature was 101°F. Child was somewhat prostrated and emaciated. Tenesmus and prolapse of rectum. Under treatment by castor oil and bismuth, the child improved rapidly.

(11) L. A., ten weeks old, excellent general condition, had been sick for one week with diarrhea, five to six yellow, slightly mucous, stools daily; no blood, no fever, no vomiting. Calomel and barley water effected a cure in two days, the stools being normal in twenty-four hours. The true Shiga and the acid type of organism were both present.

(12) R. A., five months old, good general condition. Diarrhea, six to eight fluid mucous stools without blood. No vomiting or fever. Came under observation on the third day of the at-

tack. The giving of calomel, barley water and bismuth mixture for two days, followed by a gradual resumption of nursing, effected a cure on the fifth day. The Shiga type of organism was present.

(13) K. M., eight months old, good general condition. Diarrhea without vomiting or fever. Stools fluid, mucous, no blood, eight to ten in twenty-four hours. Child sick three days before coming under observation; then calomel, bismuth mixture and barley water brought about a rapid recovery.

(14) G. S., seven months old, excellent condition. Diarrhea with eight or nine fluid, very mucous, stools without blood. On the eighth day of illness the child was brought to the clinic. Calomel and bismuth with barley water were followed by the reduction of stools to three in twenty-four hours and by the change in character to normal.

Of the breast-fed cases whose records are complete none died, all ran a very mild course, the average being three to four days after coming under observation. Save for the bacteriological findings there was nothing to indicate that their sickness had any relation to true dysentery. These cases, moreover, with hardly an exception, were well-nourished children. Blood was observed in but one case.

TYPE OF INFECTION.—There were 42 cases in which the acid type of organism was found; 15 were infected with the alkaline or true Shiga type; in 5 cases both types of the organism were found. Of the 42 "acid" infections, 9 were classified as mild cases, 21 as moderately severe, 10 as severe, 2 not being classified. Of the 15 true Shiga infections, 5 were mild, 6 moderately severe and 4 severe. Of the 5 mixed infections 1 was mild and 4 moderately severe.

From this it will be seen that in the acid type of infection, as well as in the true Shiga type, the moderately severe cases were most numerous, and there seemed to be no difference in the severity of the disease attributable to the type of infection.

We did not use at all, for diagnosis, the agglutination reaction of the blood of the patients. It has been proven in children as well as in adults that this reaction, while often present, is uncertain and unsatisfactory for the reason that it appears late, never before the end of the first week, and often not before the second or third week, and may disappear early in the prolonged cases; so that we can make our diagnosis by an examination of the stools much more easily and more satisfactorily than by the blood.

TREATMENT.—As outlined above the majority of the cases were treated by the usual methods both as to their management and diet. Milk, whether breast milk or cow's milk, was immediately discontinued; barley water, broth or some proprietary food, or rarely, albumen water being given in its place; it was only resumed when the acute symptoms had subsided. Catharsis by calomel and castor oil was the invariable rule. When there was great irritability of the intestines with tenesmus and numerous small stools, rectal irrigations, without or with paregoric, were employed. For temperature that gave rise to nervous symptoms irrigations and alcohol sponging were resorted to. A bismuth mixture was used in a few cases.

SERUM THERAPY.—There were in all 10 cases in which the serum was injected; 4 were infections with the acid type of organism and were given "Harris" serum; 6 were infections with true Shiga organism and were given "Shiga" serum. Only the severe cases were subjected to this treatment, as it was found that in dispensary practice the mothers would not return with the patients after injection unless the disease was apparently serious.

Of the injected series, cases 1 and 2 were given 10 cc. of Harris serum and did not return after the injections. Case 3, after receiving 20 cc. of Harris serum, showed decided improvement; after the injection of 10 cc. additional this was still more marked, but the child died of marasmus three weeks later without any return of the diarrhea. Case 4 was already improving on irrigations before the injection of the serum, so that no conclusions can be drawn. Case 5 showed decided reduction in the number of stools and improvement in their character after the injection of 10 cc. of Shiga serum on two successive days. Case 6 received 20 cc. Shiga serum, but the improvement in the child's condition could not be attributed to the injection.

Case 7 received 10 cc. of Harris serum when moribund.

Case 8 (the severe case quoted above) improved very markedly after two injections of 20 cc. each of Shiga serum, but only after an interval of three days, during which time there were additional stimulation and change of diet, so that the effect of the serum is doubtful.

Cases 9 and 10 were apparently uninfluenced by the injection of Shiga serum.

A rash similar to that seen after the employment of diphtheria antitoxin was observed in only one patient, notwithstanding the fact that the quantity of serum injected was very much greater than that ordinarily used in diphtheria.

The difficulties of administering the serum in outdoor practice must be emphasized. The quantity of serum of the present strength necessarily employed is large and must often be injected into an emaciated child, producing a swelling of a size alarming to the laity. Objection also arises on account of the pain of the injection.

From an analysis of these 62 cases observed by us, it seems that certain points are worthy of special note.

(1) The unexpectedly great prevalence of the dysentery organism in cases of diarrhea in infants, at least during the summer months. Thus out of 64 consecutive cases examined in the Vanderbilt Clinic, 62 were positive.

As has been mentioned before this is the first large series in which the cases have been examined seriatim, and the result is certainly striking. It is all the more so when we consider that these were cases in dispensary practice, where with the severe, the very mildest cases may be seen. Duval and Bassett examined 25 successive cases of infantile diarrhea and found the organism in 19; but it should be stated that the patients were observed in a sanatorium at a distance from Baltimore where, of course, only the more severe cases were sent from the dispensaries, while ours were all ambulant patients and their stools were examined whenever there was the slightest sign of any digestive disturbance. Our cases were also seen very early whereas, in hospitals, the cases are rarely seen until after their initial symptoms have passed.

(2) All types of diarrheal disease, as characterized by their clinical symptoms, are to be found among these cases. Some were examples of severe and some of mild ileocolitis; others could only be classed as the mildest form of intestinal indigestion. The course of the disease, while usually short, was prolonged in 8 cases.

(3) As compared with cases of summer diarrhea of other years those in this series were in general much milder; and possibly this was due to two factors: (*a*) The cool summer. (*b*) The increasing knowledge among the tenement population of the care of infants and their food.

(4) The striking number of breast-fed infants, 14 in 62 cases, more than 20 per cent. of all.

In the series of Duval and Bassett previously mentioned, there were 4 breast-fed cases and a few others in addition have been reported. The greater number in our series is accounted for by the fact that all stools from patients with diarrhea were examined. As will be remembered, of our 14 breast-fed children not one was severely or even moderately ill, and only one had blood in the stools. Such cases would therefore not be sent to hospitals, and so usually their stools would not be available for examination.

(5) The serum treatment was not given in a sufficient number of cases to warrant any conclusions. While of apparent benefit in some cases, there were others in which no effect whatever was noticed. It may be that larger dosage is necessary; but, if so, the serum must be more concentrated than at present.

On the Fatal Effects of Chloroform on Children Suffering from a Peculiar Condition of Fatty Liver.—Leonard G. Guthrie (*The Lancet,* July 4, 1903) gives a *résumé* of a paper written some years ago entitled "On Some Fatal After-effects of Chloroform on Children," as an introduction to the present article. In the 10 cases reported in the previous article it was not proven that death was not due to carbolic acid poisoning. In this article 4 cases are added which he thinks throw light on the original 10 recorded in the earlier paper. He says the additional cases seem to prove the following:—(1) That neither carbolic acid poisoning nor fat embolism will account for these mysterious fatalities. (2) That the severity of the operations has little, if anything, to do with the cause of death. (3) That the only pathological condition commonly found after death is a peculiarly intense fatty degeneration or fatty infiltration of the liver. This condition was found in 5 of the first series and in 3 of the second series of cases. It was not noted in 3 of the first series, and in 3 of the second series of cases. It was not noted in 3 of the first series, but in these a microscopical examination was not made. Of the remaining 3, 1 recovered and in 2 permission for a post-mortem examination was refused. (4) The only other circumstance common to all the cases was that chloroform had been administered some hours or days before death. We are therefore driven to seek an explanation in the morbid state of the liver, which was demonstrated in 8 out of 14 cases, and can therefore not be regarded as a pure coincidence, and also to inquire again what part, if any, was taken by chloroform in producing it.—*Boston Medical and Surgical Journal.*

CONCERNING THE NATURE OF STILL'S TYPE OF CHRONIC POLYARTHRITIS IN CHILDREN.

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A peculiar form of chronic joint disease in children was described in 1896, by Still, and is now widely known in connection with his name. The chief characteristics of this class of cases that distinguish it from arthritis deformans and from chronic rheumatism, as these latter conditions are ordinarily recognized, are marked enlargement of the lymph nodes, and usually of the spleen; a tendency to irregular fever; the absence of noteworthy bone deposits; and the fact that this peculiar disease occurs exclusively, or almost exclusively, in young children, usually appearing before the second dentition.

Still believes, and others agree with him, that the disease is probably an infection. The fever, the swelling of the lymph nodes and splenic enlargement, and the general course of the disease make it seem highly probable that this view is correct. The cause of the infection, however, has never been demonstrated.

The observations that I am about to present have led me to the belief that, in the individual case that I am recording, and perhaps in other cases, the condition is probably a peculiar form of chronic, widespread tuberculosis of the joints. Still's disease, of course, differs materially from joint-tuberculosis, as this condition is usually conceived of. There is no tendency to the production of white swelling, to abscess or sinus formation, or to the appearance of other destructive lesions of the joints; the postmortem examinations that have been reported have not demonstrated any gross evidences of tuberculosis; and a very striking dissimilarity is found in the fact that Still's disease tends to involve most of the joints, while tuberculosis remains limited to a small number. The latter point, however, and the apparent absence of the lesions of tuberculosis are not extremely weighty arguments, when one considers that a form of lymphatic disease that shows no macroscopical or histological evidences of tuberculosis, and is widely different from the ordinary scrofulous lymph nodes, has been shown, chiefly by Sternberg, to be a not uncommon condition. Still's disease, with the joint-lesions left out, is, in its chief clinical characteristics, not at all unlike the Sternberg type of chronic lymphatic tuberculosis; and, with this fact in mind, the general clinical history of Still's disease is, in itself, sufficient to suggest the possibility that the disease is tuberculous.

The case upon which my observations have been made is that of a boy, now thirteen years old, an inmate of the Philadelphia Home for Incurables. He was admitted to that institution in March, 1901, and was first seen by me in July, 1902. Previous to entering the Home for Incurables, he had been in the Children's Hospital, under the care of Dr. Stengel and of Dr. F. A. Packard; and the records of that hospital have kindly been furnished to me. The child was under observation in the Children's Hospital from August, 1900, to March, 1901. The history given upon entering states that he had never been in very good health, and that he had been ill-treated and brought up in unhygienic surroundings. There was no tuberculous or rheumatic family history. He had measles three years previously; but had had no other illness until March, 1900, when the joint trouble began.

This had had a gradual onset, but had been associated from the beginning with failure in general health. It had first affected the right ankle, then the right foot, and next the left ankle and the left foot—this in the course of about three months. Subsequently, one knee after the other had become involved; and in July, the disease had involved both hands. There had been a progressive increase in the severity of the joint-condition with moderately acute exacerbations of the pain, swelling, and stiffness; but there was no history of severe acute illness at any time during the progress of the disease.

At the time of his admission to the Children's Hospital, it was noted that the patient's axillary lymph nodes were swollen and hard; the epitrochlear and the inguinal lymph nodes were palpable, and the splenic dullness was increased. At that time there was also swelling of the wrist joints and fluctuation over them. Most of the finger-joints were swollen, and a number of them were enlarged. The joints of both great toes were swollen and tender, as were the ankles and the region over the tarsus. The knees were enlarged, and movement at the knee-joints caused pain. The blood showed 14,000 leukocytes and 60 per cent. of hemoglobin; the red cells numbered 6,000,000. There was a systolic cardiac murmur in the pulmonary region, but no definite evidence of organic heart-disease.

While in the Children's Hospital, the boy had repeated temporary exacerbations of the objective and the subjective joint signs; and it was repeatedly noted that the lymph nodes in regions corresponding with the joints that had shown acute exacerbations of their disease had become larger. His temperature during this time was very irregular. He had a number of periods of persistent fever, ranging as high as 103°F., and lasting for several weeks. During the intervals the temperature was sometimes nearly normal, but sometimes showed irregular temporary elevations. The boy was sent to the Home for Incurables unimproved, with more extensive disease than when admitted into the Children's Hospital.

When I first saw him in July, 1902, his general condition had decidedly improved, as contrasted with the condition described in the notes of the Children's Hospital. The joints remained much the same as they had been upon admission into the Home for Incurables. For some months, the patient had had no exacerbation of the joint condition; indeed, he had had almost no symptoms referable to the joints, except the disability that the disease had produced.

His lymph nodes at that time showed striking enlargement. A large number of the anterior and the posterior cervical lymph nodes were palpable; they varied in size from small granules up to the dimensions of a pigeon's egg. There was marked enlargement of the axillary lymph nodes; those in the right axilla running up to a diameter of about an inch, while in the left axilla many nodes were enlarged, one being of the size of a small hen's egg, and several having a diameter of as much as an inch. The brachial and the epitrochlear lymph nodes were readily palpated, and a number of the inguinal lymph nodes were as large as hazelnuts. The splenic dullness was distinctly increased, but the spleen could not be felt; the boy's deformity, however, rendered it very difficult to palpate the splenic region.

There were no definite signs of pericarditis, a complication of this type of joint-disease that Still states is common. The patient likewise showed no signs of other disease excepting that of the joints, which was very extensive.

The main points about the joint condition were as follows:—The jaw was unaffected. There was marked involvement of the cervical spine; rotation of the head and anteroposterior motion being extremely limited. The left shoulder was uninvolved; motion in the right was decidedly limited, but there was no other palpable or visible change about the joint. Both elbows were nearly fixed at about a right angle. Movement in the elbow joint was very slight. The rotary movements of the radius were good. The right elbow was globose in appearance, apparently chiefly from thickening of the soft tissues of the joint. Both wrists were nearly rigid at about a right angle. There was swelling over the carpus and over the upper half of the metacarpus on both sides; and there was also some fluid over the right carpus. The carpal and metacarpocarpal joints were practically immobile. There was very little motion in the metacarpophalangeal joints on either side, all these joints being overextended. The first and the second of them on each side showed marked thickening, which seemed to be partly of the ends of the bones. The first interphalangeal joints of all the fingers were thickened, particularly on the left side; and this thickening seemed to be partly bony. There was but little motion in these joints, the position being one of flexion at about a right angle. The thumbs showed thickening of both joints, and subluxation at the metacarpophalangeal joint; and the joints were almost entirely fixed. There was also apparently slight bony enlargement of these joints. There was slight limitation of the motion of the left hip; the right hip was not involved. Both knees were globose; the ends of the bones were possibly slightly enlarged, and the soft parts were somewhat thickened, producing a partial obliteration of the normal prominences. There was some fluid under the left patellar tendon. The knees were held at a right angle, and the hips could be straightened but little. There was decided limitation of the movements of the ankle-joints; the joints looked somewhat globose; and there was swelling over the tarsus and the metatarsus, the enlargement being apparently of the soft tissues. Both the tarsus and the metatarsus seemed to be rigid. The toe-joints showed practically no involvement. None of the joints showed hyperostosis or bony grating.

The following is a skiagraphic report by Dr. H. K. Pancoast, who was kind enough to make a series of plates for me on May 4, 1903. Only the main points in connection with the joints that showed noteworthy lesions are mentioned.

Left Hand and Wrist.—Dense adhesions are present between all the carpal bones and in the radiocarpal articulation. The same is true along the line of the carpometacarpal articulations, especially between the first and the second metacarpals, and between the trapezium and the trapezoid. There is apparently a slight subluxation at the ulnar side of the first phalanx of the thumb. There are well-marked adhesions in the latter joint, as well as in the interphalangeal joint. Deposits are present in the other metacarpophalangeal joints, with a widening of the proximal epiphyses of the phalanges.

Right Hand and Wrist.—The radiocarpal, carpal, and carpometacarpal joints present a similar appearance to those of the right hand; but the adhesions are denser. The proximal ends of the first phalanges show a decided widening, corresponding with the epiphyses. There is a loss of bony substance in the distal end of the second metacarpal. The same end of the third metacarpal is apparently worn away on the radial side, where the proximal end of the phalanx is undeveloped.

Right Elbow Lateral View.—The olecranon epiphysis is possibly more advanced in ossification than is usual at this child's age. There are dense adhesions between the posterior portion of the olecranon and the region of the olecranon fossa. The elbow is flexed at about 120° F. There is no loss of bony substance at this articulation. There are a few adhesions between the coronoid and the anterior surface of the humerus on this side.

Left Knee, Lateral View.—There are well-developed adhesions between the patella and the lower femoral epiphysis, the patella being in relation with the latter only. The adhesions apparently involve both condyles. The remainder of the joint cavity is fairly clear. There seems to be a thickening of the articular surface of the upper tibial epiphysis. There is no apparent loss of bony substance.

Right Knee, Lateral View.—There are well-marked adhesions between the patella and the femur, and between the femur and the tibia; and the articular surface of the femur and of the tibia show very marked thickening, this being much more pronounced than in the other knee. There is a decided increase in calcification at the epiphyseal line in the upper end of the tibia as compared with the opposite side.

The Hips.—Both hips show marked adhesions between the femoral head and the acetabulum, and marked thickening of the articular surface of the femur. The angles of the necks seem to be more obtuse than is normal. The necks are greatly thickened, and on the left side the infiltration may readily be seen to involve the capsule.

Since the time of the general physical examination described above, the boy has improved slowly, but decidedly. He has gained flesh; he has a good color; and many of the joints have shown marked improvement in motion. In July, 1902, he was confined to a roller-chair; he is now able to run about on crutches and to walk a little without either crutches or cane. The chief improvement is in the knees and in the ankles, though the wrist-joints and some of the finger-joints show marked improvement. The boy has had practically no pain during the last year, except at the time of some tuberculin-injections, which will be mentioned.

The enlargement of the lymph nodes has decreased to a striking extent. Two or three nodes as large as peas may still be felt in the neck. All the other cervical lymph nodes have decreased so much as to be scarcely palpable. The lymph nodes in the right axilla have shrunk, the largest being now the size of a hazel-nut. Those in the left axilla decreased greatly in size, so that at the time of an operation that will be mentioned, the largest was about an inch and a quarter in diameter. The inguinal lymph nodes, also, seem to have become smaller.

During the whole of the year 1902, the boy had a tendency to occasional brief elevations of temperature, usually to about 100°F. This fever was not accompanied by other symptoms. During the last six months the temperature has been taken only irregularly; the patient has had but slight variations from the normal, so far as the records show.

With the suspicion already mentioned that the whole condition might be tuberculous, the child was subjected to tuberculin injections, with the following results:—

On October 29th, 1½ mg. was injected, without any definite result. On November 5th, at 3 P.M., he received 3 mg. On the 6th, at 3 A.M., the temperature was 101°F.; and at 6 A.M., 102°F. It remained at this point for six hours and then declined, reaching normal at midnight. The boy felt generally miserable; a number of the joints became very painful (while, as already stated, he had been free from pain for some months previously); and he begged to have his daily massage omitted, as the tenderness of his joints was so great that he could not stand having them manipulated.

Because the boy had, in ordinary circumstances, a tendency to fever, another injection was given on November 12th at 9 A.M., his temperature meanwhile having been regularly below 100°F. Six hours later, at 3 P.M., the temperature was 100⅖°F.; at 6 P.M., 103°F. It remained near 102°F., for twenty-four hours, and then rapidly declined to normal, remaining normal for four days, after which the regular temperature-records ceased.

During this reaction the boy experienced marked nausea, felt generally ill, and complained of intense pain and tenderness in many of his joints. The wrists and the ankles were swollen; there was some redness around them; and they were very tender. Movement of the joints caused the patient to cry out with pain. During the reactions the enlarged lymph nodes became slightly tender; but no other change in them could be noted. The boy showed no signs of pulmonary disease, either during the reactions or at any other time.

On March 28, 1903, Dr. Jopson, at my request, removed the lymph nodes from the left axilla. These were of different sizes, the largest being somewhat over an inch in diameter. Two were about three-quarters of an inch, and the fifteen others secured were smaller. Their macroscopic appearance was in no way striking. There was no suggestion of tuberculosis in their appearance, and their color and consistency were about normal.

Dr. Ravenel kindly made a microscopic examination of these lymph nodes and inoculated guinea-pigs with an emulsion made from them. There were no histological evidences of tuberculosis, and an examination of several sections showed no tubercle bacilli. The only histological changes noted were slight enlargement of the Malpighian bodies and poor staining of their cell-nuclei. An examination of the emulsion from several of the lymph nodes, however, showed a large number of acid-fast bacilli, having the typical appearances of tubercle bacilli, some of them lying singly or in pairs, while a number of fairly large clumps could be readily discovered. Five cc. of an emulsion, of a consistency just sufficient to pass through a hypodermic needle, was injected into each of two guinea-pigs. To our surprise, the result of these inoculations was entirely negative. The animals were still well five weeks after the inoculation, and they were then killed. In the absence of Dr. Ravenel, Dr. Gilliland kindly examined them; the most careful search failed to disclose any evidence of tuberculosis or of any other disease. Dr. Ravenel has no doubt that the bacilli seen were tubercle bacilli; and this cannot well be questioned, particularly in view of the violent tuberculin reactions. Pseudotubercle bacilli so far as known do not invade the tissues generally; and this point, together with the tuberculin reactions, makes it seem practically indubitable that the bacilli were tubercle bacilli. The result of the inoculations indicates that the bacilli in the lymph nodes must have been either dead or of extremely low virulence. Dr. Ravenel thinks that they were dead, because they were present in such large numbers as to make it certain that so many must have been injected into each guinea-pig that it would scarcely have been possible for the animal to have resisted infection. It is quite possible that some of these bacilli were still alive but of low virulence. This point cannot, of course, be definitely settled.

These observations indicate that this boy has widespread tuberculosis, which is of such a low degree of virulence that he has been able to kill off large numbers of tubercle bacilli and, finally, to control the progress of the disease. I believe that the results also furnish strong indication that the disease of the joints is tuberculosis. The intense local symptoms in the joints at the time of the tuberculin injections; the fact that the enlargement of the lymph nodes was so distributed as to be in apparent relation with the joint disease, and that much at least, of the enlargement of the lymph nodes is known to have followed the joint disease; also, the fact that the nodes have several times been noted to be increased or decreased in size, in accordance with the progress of the joint disease—all these indicate that both the joint disease and the enlargement of the lymph nodes are probably due to the same cause, and that the disease of the joints has produced the node enlargement. Therefore, since the nodes are tuberculous, it seems highly probable that the disease of the joints is also tuberculous.

It may very properly be objected that the tuberculin reactions described were due to the tuberculosis of the lymph nodes, and that they indicate nothing concerning the nature of the joint disease. I, of course, admit the possibility of this, but I think it improbable, because of the relations already mentioned between the course of the lymph node enlargement and the progress of the disease of the joints; and also because of the violent symptoms and the objective signs in the joints at the time of the reactions. I am aware that joint pains not infrequently occur at the time of tuberculin injections; and that they are, naturally, most likely to occur when the joints are the seat of disease. I think, however, that the facts that I have stated make it highly probable that the joint manifestations were due to the local reaction. The symptoms referable to the joints were far more violent than were those observable in the lymph nodes, the latter showing only a little tenderness and slight swelling. This makes it probable that the joints actually reacted, and were the seat of a much more active process than were the lymph nodes. The symptoms at the time of the reactions, therefore, as well as the clinical course of the disease in the joints and in the lymph nodes, favor the view that the disease of the joints was the essential condition, the disease of the lymph nodes being largely or entirely secondary. Absolutely definite proof of the nature of the joint disease can, of course, be given only through histological and bacteriological study of the joints themselves, in cases of this kind that come to necropsy, or in cases in which the excision of one or more of the joints might be a proper method of treatment. The facts that I have presented, however, justify, I think, a serious belief in the probability that this patient has a form of tubercular arthritis that is peculiar in its relatively benign local lesions, and especially in the involvement of many joints; and this indicates the strong possibility that Still's disease may, in a considerable proportion of instances, be of this nature; a possibility that, as stated, seems to be suggested by the chief clinical characteristics of this disease.

Tuberculosis is believed by Poncet and some of his pupils to be responsible for a large number of cases of joint disease that are not usually considered to be of this nature. I have discussed this larger question elsewhere.* The case of Still's disease referred to in that communication is the same as that reported in this paper.

Hereditary Syphilis without Eruption. — Hochsinger (*Wien. Med. Presse,* September 28, 1902) says that there have been cases of congenital syphilis in which distinctly syphilitic lesions of the viscera, joints and nasal mucous membrane have been present in the early days of life, and no eruption appeared until several months had passed. It would seem that in congenital syphilis the visceral and joint lesions often appear before the skin manifestations. Thus 3 cases which were observed from birth suffered from joint and visceral syphilis, but remained free from skin lesions, and in 6 cases under observation for over a year no eruption had appeared. The diagnosis was proven by the results of mercurial treatment.—*International Medical Magazine.*

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* Edsall and Lavenson, American Journal of the Medical Sciences, December, 1903.

HEMORRHAGIC DISEASES IN CHILDREN.

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Purpura is not a disease in itself, but the outward manifestation of a condition or group of conditions not yet well understood. The following cases illustrate some of the forms of this hemorrhagic disease in infants and children, and the quotations from the literature are given in an attempt to discover the cause and most successful treatment of this condition.

Purpura signifies purple spots, *i.e.,* the hemorrhages, which occur in the skin, upon mucous membranes and in all parts and organs of the body. It may seem to be due to (1) vasoneurosis, as in locomotor ataxia; (2) a drug as iodid of potash; (3) an infectious disease, as diphtheria or smallpox; (4) a diathesis, as in rheumatism; (5) a special germ, and lastly, (6) a toxin, as in enteritis or tainted food.

The following cases illustrate the clinical features that we wish to study:

Case I.—In September, 1901, M. S., three years old, vomited bloody mucus and voided blood in the stools which were many and loose. Petechiæ showed over the entire body and in many places larger hemorrhages—vibices. There was frequent epistaxis and bleeding from the spongy gums. The fetor from the stools was as Boerhaave describes, "sending forth a stench which subsisted long." The temperature and pulse were about 100, the pulse being very weak. Tannigen, astringents, stimulants and correct dietetics did not help. The girl died in three weeks from exhaustion.

Case II.—James McG. was admitted to the New York City Children's Hospital in July when two weeks old. He was bottle-fed and had green watery stools. On the 23d of July the vomitus and stools contained streaks of blood. Temperature 97.6°F. Two days later the temperature rose to 101.4°F., the respiration to 42 per minute and the pulse to 132. These dropped to normal and so remained except when the temperature fell to 97° during a collapse on August 3d. In four days the bloody stools ceased, but purpuric spots developed in the skin. The blood count showed red cells, 5,160,000; white cells, 11,000; hemoglobin, 70 per cent. On August 6th the child's face and feet became swollen and twenty-four hours later he died. The diagnosis of dysentery having been suggested, Dr. W. H. Park examined the blood and made cultures from the intestinal contents. He reported: "There were no dysentery bacilli of any type found and the blood did not give any agglutination."

The treatment given included bismuth, brandy, saline irrigations, orange juice and adrenalin chlorid, but all were unavailing.

The autopsy was performed by Dr. T. Flournoy. The lungs were normal; therefore, the high temperature and rapid breathing of July 25th were not due to pneumonia. There were ecchymotic spots on the pericardium, otherwise the heart was normal. The kidneys and spleen were congested and the liver was very dark. There were a few small brown spots in the stomach and small intestine. The lower part of the ileum was markedly congested as were the colon and rectum. The first two inches of the mucous membrane of the colon was covered with dark spots. There were spots of the same dark brown in the cecum.

Goodhart mentions an autopsy with intestinal lesions like the above.

J. Lewis Smith[1] records a similar autopsy on a baby eight months old who died in 1865. He collected 49 cases and discussed them fully under the head of gastrointestinal hemorrhages and purpura. Billard gives the same history and symptoms and postmortem examination of an infant dying in 1826.

Willan,[2] in 1808, recorded seventeen patients with hemorrhagic purpura. Three of them were boys and three of them infants not more than one year old. He describes a case with joint affection, gastrointestinal and skin lesions—purpura. His article contains an extensive review of ancient literature, including that of Lusitanus who wrote in 1550 describing purpura under the name of morbus pulicaris sine febre. Engalenus described it under the name of scurvy.

Werlhoff in 1735 described the hemorrhagic form which he called morbus maculosus.

Schöenlein (1793-1864) described particularly the arthritic form as peliosis rheumatica.

Henoch, in 1874 and later, described the above form with the addition of gastrointestinal lesions and symptoms.

The varieties emphysized by these three authors constitute the classification of some other writers. The conditions are similar and are really one disease.

Case III.—Lizzie D., age three months; an orphan in the Infants' Hospital, had been fed condensed milk and Mellin's Food. When admitted in March her weight was 9 pounds 13 ounces. She was ordered a modified milk formula, but lost weight steadily because of enteritis and bronchitis. After four weeks, small purple patches appeared on the body; orange juice was ordered, but was sometimes vomited. In ten days the patches of purpura covered the body. On April 27th she weighed 6 pounds 13 ounces. On May 1st the child's body was black from the neck down. On May 8th death occurred. The temperature ranged between 98° and 100° F.

Case IV.—Yetta G., age six months, wet-nursed. Weight on January 30th was 13 pounds 1 ounce. She was well until February 19th when a mark like a bruise was found on the buttock. Two days later a nose bleed caused a loss of an ounce of blood. The ecchymotic spot on the buttock extended to the thigh. The girl developed bronchitis. She became restless and had a discharge from the ear. The cough increased. On April 4th she had two bloody stools. The body and limbs were covered by purpura. On April 8th there was more blood in the stools. She died that day.

Here purpura occurred in a wet-nursed infant. As the orange juice given produced no appreciable effect, we infer that the case was not scurvy. If not idiopathic it was a sequel of the broncho-pneumonia she had had recently. Cases of this kind are not rare in the Infants' Hospital.

Bremner[25] records purpura in a nursed boy six months old. He had green stools and a clear intestinal hemorrhage. Temperature was 100° to 105° F.

The autopsy showed general purpura and a meningeal hemorrhage around the fissure of Rolando. There were spots of congestion in the stomach and extreme fatty degeneration of the liver. The general and marked fatty changes have been noted by several writers.

Case V.—Chas. D., age twelve years, for some months had had large and small hemorrhages over entire body. Anemic, but had plenty of life for mischief which led to his being whipped. Wherever he was struck black and blue marks of hemorrhage remained. The slightest bumps at play left their mark. The heart was normal except for an anemic murmur. Doubtful history of rheumatism. The boy improved on iron, lemons and oranges.

This case belongs to the class of purpura hemorrhagica.

CASE VI.—George N.,[24] (reported by me in the *New York Medical Journal,* 1897), age fourteen years, was subject to nosebleed. He was a very pale boy and was thought to be tuberculous. After a fall on the ice a large hemorrhage resulted in the left buttock. Later this became inflamed and an incision was made to open it. The blood that oozed from the cut skin was so thin that little lines of red cells could be seen flowing in the clear serum. There was an absence of fibrin forming elements to such an extent that the blood had no viscidity and would not coagulate. The oozing was controlled by extreme pressure. Seven weeks later two other large clots formed and softened without apparent bruise or violence. He finally recovered after taking astringents, iron preparations and neucleoalbumins. The boy's history was that of a bleeder, and his case is to be put in the class of hemophilia.

Purpura with scarlatina and hemorrhage of the lung was seen by Murry.[3] The case was a boy operated on for the radical cure of hernia. The next day his temperature was 101°F., and he had a scarlet rash. Thirteen days after the operation he developed marked purpura. The autopsy disclosed pneumonia and a hemorrhage at the apex of the right lung. There were small hemorrhages in nearly all organs save the brain.

Purpura may complicate diphtheria.[4] A girl ten years old had diphtheria from which she recovered, but on the seventh day she vomited blood and had bloody stools. On the following day her joints were swollen, purpura appeared and albumin was found in the urine. She was well in twelve weeks. Buckley, who reported the case, wondered if the antitoxin predisposed to this, as the girl had received a large amount.

Purpura may complicate pneumonia. Snow[5] reports extensive and fatal purpura in a rachitic girl baby who also had pneumonia. He quotes Henoch and Baginsky as recording similar cases where the hemorrhages occurred after the acute stage was past. Both died. He writes: "If the pneumococcus was not the cause of the purpura it at least favored its development."

Purpura may follow measles.[6] An infectious and fatal case was that of a boy thirteen months old who had measles during a second attack of bronchopneumonia. As the measles rash disappeared, purpura came out in petechiæ and nodosities with necrotic centres. Virulent pneumococci were found in the dermic lesions as well as in the lungs.

Purpura may also complicate appendicitis.[7] It may occur after sea bathing,[8] and after eating tainted food.[9] A boy, fourteen years old, ate tainted meat, had violent vomiting, diarrhea and general purpura without necrosis. Though the prostration was great he recovered.

Levi's case[10] began on the eighth day of bronchopneumonia and died on the twenty-seventh day. Pneumococci and streptococci were found in the heart, blood, pericardial fluid, cerebrospinal fluid and pus from the lung; also, in sections of the lung and skin at the site of hemorrhages. The infection seems to have been from the bronchi to the skin.

Race does not give immunity. S. Solis Cohen[11] reports a typical rheumatic purpura in a mulatto boy, four years old. He had great swelling of the joints, also of the arms, feet, genitalia and one eye. The purpura was specially marked at the flexures of the joints. Temperature 101°F., pulse 104. He was cured in fourteen days by salicylates of soda and iron.

An unusual cause in one instance was infected ass's milk.[14] A boy of three years was given milk from an ass having an abscess of the udder. The purpura was of the gastroenteric type.

Purpura as a neurosis was discussed by S. Weir Mitchell in 1869, but it is rarely if ever seen in children.

Mackenzie[17] reports a fatal case, five months old due to 2½ grains of iodid of potash. Duhring[18] cites cases due to chloral, quinin, and salicylic acid. Several other drugs have been mentioned as causing the disease, but exact records are not at hand.

CASE VII., a baby, three weeks old, is like many noted during the first few months of life, but one younger case, a congenital purpura, is described by Brown.[12] After a protracted labor the child was born with a few spots. There were hemorrhages from the stomach and bowels, but none from nose or mouth. There was no joint swelling. A hemorrhage from the cord was fatal on the third day. Hemorrhages were found in the brain, etc. The mother was but seventeen years old, and her father was "a bleeder."

Tuley[13] reports a typical scorbutus in a child two years seven months old. The gums were spongy, ankle joints fusiform and painful, not able to walk, diarrhea with hemorrhage from the bowel, petechiæ all over the body and some temperature. The child had a general diet; hence, how had it scurvy if the old etiology be true? Muir[14] records blood examination and autopsy findings in the case of a boy fourteen years old who was well until he had a chill and cough. Hemoptysis followed with purpura, severe epistaxis and hematemesis. Six weeks before death his blood showed 800,000 red cells; 7,000 white cells and 12 per cent. hemaglobin. Four weeks later red cells 640,000; polymorphous leukocytes 25 per cent., lymphocytes 70 per cent., no eosinophiles, no neucleated red cells. The autopsy disclosed the bone marrow of the femur and ribs to be white and fatty, with patches of hemorrhage. The marrow was mostly fat cells and with the absence of red neucleated cells showed the bone changes to be primary.

Jacobi[16] says it is a fact of great importance that "purpura hemorrhagica, scurvy and morbus maculosus are one and the same thing." Therefore, it is proper to give the blood analysis of Rotch's[17] scorbutus case. The boy was ten months old. The hemoglobin was 50 per cent.; leukocytes 27,000; erythrocytes 2,400,000; polymorphonuclears 68.6 per cent.; small lymphocytes 23.2; large lymphocytes 7.4; eosinophiles none; myelocytes, 2; mast cells .6.

Forchheimer,[27] in 1894, also "believed that all conditions classed under the head of purpura, peliosis, etc., were scorbutic in nature."

THE BACTERIOLOGY is varied. Guimard[15] examined 12 cases of various types of purpura in a children's ward in Paris. Micrococci were found in all cases and cultures made produced purpura in the rabbits inoculated. Levi[10] found pneumococci and streptococci in the blood and organs. Claude[6] found virulent pneumococci in the skin lesions as above.

The infectious theory receives support from the four Irish cases,[26] a pig, its owner, the girl who cared for the pig and a cowherd on the place all having purpura. It was fatal to the first and to the last mentioned.

Tozzoni and Giovannini, 1890,[27] examined a case of impetigo followed by purpura. They found staphylococci pyogenes aureus and a pus-producing bacterium, not before described, which produced purpura in a dog and rabbit, but not in a pigeon or mouse. They conclude a mixed infection is the cause.

Finkelstein[19] "connects the hemorrhagic diathesis with the bacillus pyocyaneus."

Letzerich, in 1889, claimed to have isolated a specific bacillus resembling that of anthrax. The pure culture caused purpura when injected in rabbits. Petrone[20] injected rabbits with the blood of purpura patients causing general hemorrhages. Hanol and Luzet[20] found streptococci in the fetus of a woman dead of purpura hemorrhagica.

The presumption is strongly toward a microbic origin of the disease leading to the endarteritis, fatty changes and other lesions found alike in purpura, scurvy and infantile scorbutus.

The specific infections of scarlatina, measles and diphtheria or typhus and smallpox are to be remembered; also toxins, as from the digestive tract, or introduced from without.

TREATMENT.—Dietetics, especially the use of orange or lemon juice, are as important as drugs in cases of the scurvy kind.

Calcium chlorid increases the coagulability of the blood and checks the hemorrhages. Vegetable acids, astringents, turpentine and arsenic are useful. Among the newer drugs stypticin and suprarenal gland stand first. Stypticin is given in doses of one-tenth of a grain. Suprarenal gland is administered in the form of adrenalin chlorid solution, 10 drops of a one to one thousand solution every two hours. MacAdam[21] reports the cure of purpura fulminans in a girl of five years. Blackburn[22] and Finsey[23] report similar cures in a man and a woman with purpura hemorrhagica. The adrenalin acted promptly in virulent cases after other remedies failed. It is now apparently our best drug.

I have made the report because these cases are not very common and because the confusion of classification and variety of stages in the cases offer a fruitful field for study. Evidently the disease is not yet understood and we only described the clinical picture.

The causes seem to be many. A specific germ is not yet demonstrated for all cases. A sure antidote cannot be claimed though two are nearly so, namely, fruit acids and suprarenal gland.

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HERNIA OF THE VERMIFORM APPENDIX WITH ADHESION TO EPIDIDYMIS IN AN INFANT.

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AND

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Hernia of the appendix is not rare but it is uncommon. Morgagni in 1750 was perhaps the first to make reference to it. Scarpa reported several cases in 1806, and in 1899 Peterson was able to collect 116 published cases. Piersol in 1901 estimated the number of reported cases as 125, and since that time 3 additional cases are on record. The following case in the service of one of us (Shaw) at the Albany Orphan Asylum, presented at the autopsy a most unusual condition.

Sidney P., born November 10, 1902, out of wedlock, died October 29, 1903. On admission to the asylum, January 31, 1903, he weighed 7 pounds. He was fed on modified milk mixtures and on Mellin's Food, and his weight was slowly increasing when he contracted measles and died on the fourth day from bronchopneumonia. His weight one week before death was 9 pounds 2 ounces.

The autopsy was performed by Dr. Stanton two hours after death. The following notes are from the autopsy protocol:—

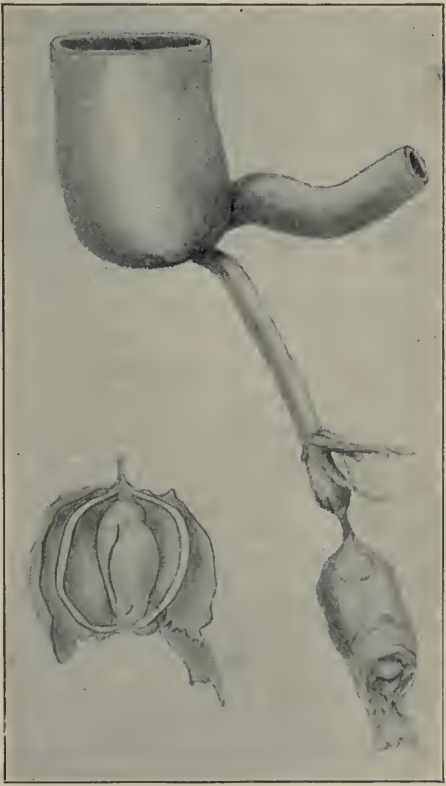
Abdomen.—Omentum contains very little adipose tissue. Abdomen is free from fluid. Serosa smooth and glistening. Appendix is 8 cc. long and extends directly downward from cecum through internal ring and inguinal canal and is so united by adhesions to the testicle that the latter can be drawn up into the inguinal canal by traction on the appendix.

Anatomical Diagnosis.—Bilateral lobular pneumonia. Cloudy swelling of liver and kidney. Acute congestion of spleen. Congenital hernia of appendix with adhesions between epididymis and appendix.

Sections from the left testicle showed extensive thickening of capsule and a growth of fibrous tissue between tubules.

Microscopic Diagnosis. — Bronchopneumonia endothelial hyperplasia in spleen and retroperitoneal hemolymph node. Albuminous and fatty degeneration of liver. Slight albuminous degeneration of kidney. Atrophied thymus. Cloudy swelling of heart. Chronic orchitis. Chronic periorchitis.

The drawing shows where the appendix entered the internal ring and the adhesion between the tip of the appendix and the testicle. The small drawing is from a section of the testicle. The thickening of the tunica vaginalis can be plainly seen.



HERNIA OF APPENDIX, WITH ADHESIONS TO TESTIS.

Hutchinson classifies hernia of the appendix into two divisions: — Congenital and acquired. The congenital form is always inguinal and almost invariably occurs in the male sex and on the right side. Adhesions have been observed between the appendix and wall of sac, testicle, cecum, omentum, rectum, ovary, tube, bladder and abdominal peritoneum.

Brieger classified a number of cases as follows:—The appendix was free in the sac in 12 cases, adherent to the sac in 14 cases, to the cord in 3 cases, to the omentum in 1 and to the testicle in 2 cases.

Several explanations of these adhesions have been made. Kehrer, Hutchinson and Piersol think it due to a persistence of undeveloped folds of peritoneum.

Rokitansky, Simpson and others believe it to be the result of fetal peritonitis. Virchow, Schmidt and Orth have upheld the frequency of this. Our case points to this cause, especially as the tunica vaginalis shows evidence of former inflammation.

The persistence of certain fibers of the gubernaculum testis, the effect of post hernial inflammation, and an unusual length and motility of the appendix have all been mentioned as producing this condition.

Crozer Griffith in 1901 gave a very complete list of cases of appendicitis occurring in infants under two years of age. Since then I have found 3 more in the literature. This makes in all 18 cases now on record. Of this number there was a hernia of the appendix in 6, or 33 per cent. This would show that when the appendix has descended into the scrotum there is a very great probability that it will become inflamed.

Infant Feeding.—In *The Lancet* of September 19, 1903, Hutchinson summarizes as follows:—(1) The first essential . . . is a definite plan on which to go and to avoid haphazard procedures. (2) Diluted cow's milk, condensed milk and peptonized milk may be regarded as the positive, comparative and superlative of digestibility respectively, and should be tried in that order until the digestive power of the child is suited. . . . (3) Periodic weighing of the child is the only test of the success or failure of the food selected. (4) In cases in which even peptonized milk fails to give good results great benefit often follows the administration of grey powder, even in cases in which there is no reason to suspect a syphilitic taint. (5) In spite of all care in the use of the above methods there remains a residuum of cases in which progressive wasting persists. Many of these seem to be babies who are unable to digest the casein of cow's milk in any form. (6) In such a case one should try to procure a wet nurse for the child, and, failing that, one must eliminate casein from the diet by making whey the basis of the feeding mixture. (7) The use of a patent food as the sole article of diet for a baby is rarely, if ever, necessary so long as cow's milk can be obtained either fresh or condensed. (8) If a child is unable to digest much cow's milk it is often worth while to try the effect of adding a little starchy food to the diet, even at an early age, for inability to digest milk appears to be sometimes accompanied by an unusual capacity for the conversion of starch.—*Journal American Medical Association.*

REPORT OF A CASE OF PERFORATION IN TYPHOID FEVER IN A CHILD OF SIX YEARS.*

BY JOHN H. JOPSON, M.D.,
Surgeon to the Children's Hospital, Philadelphia.

My object in making this brief report of a case of intestinal perforation in a child, is not to point out any difference in symptomatology in this case from those commonly observed in adults, because, as will be seen later, none was present; nor to present any departure from the usual technique of operation, for none was attempted; nor yet to record a successful result, for unfortunately the operation was performed at such a late stage that little grounds for hope were present; but mainly to put on record a case of this grave accident occurring at an age when it is rarely encountered; at an age which makes this patient possibly the youngest yet reported.

M. G., male Hebrew child, was admitted to the Children's Hospital at 3:15 P.M. on October 1, 1903, on the service of Dr. D. J. M. Miller. The family history was negative, and unimportant for our present consideration. The boy had been healthy up to the time of his present illness. He had been taken sick two weeks before with pronounced symptoms, consisting of malaise, fever, cough, and headache, and three days later went to bed, and remained there under the care of a physician until his admission to the hospital. During this time he had increasing fever, diarrhea, and complained a good deal of abdominal pain, which seems to have been located in the right iliac region and has been greater for the past two days. He has lost weight during his illness. There was no vomiting present until the day before admission, September 30th, when he began to vomit. Bowels had not moved since the morning of the 30th. The child was sent into the hospital as a case of peritonitis by the attending physician.

An examination of the patient (notes by the resident physician) on the afternoon of the day of admission showed him to be pale, emaciated, and with anxious expression; tongue coated, throat negative, pulse rapid and of poor volume, heart normal in outline, no murmurs; breathing almost entirely thoracic, lungs clear. The abdomen was distended and tender, particularly in the right iliac region. There were a few suspicious spots. There was vomiting, forcible, indeed projectile, of watery, green material. The temperature was 102.8°F., pulse 132, respiration 64. The patient was admitted in the afternoon, after Dr. Miller's daily visit to the hospital. At 7 P.M. the child's condition was about the same as on admission. At 11 P.M. the distention, abdominal pain and tenderness and thoracic breathing were noted to be more marked, and the temperature had fallen from 102.8° F. to 99.6° F. in six hours. The patient was still vomiting, and the leukocytes, counted for the first time, were 11,440.

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* Read before the Philadelphia Pediatric Society, November, 1903.

I first saw and examined the patient at 12 M., about nine hours after his admission. The temperature was 98.8°F., pulse 120, respiration 48. There were abdominal distention, generalized rigidity, tenderness, especially pronounced in the right iliac region, absence of liver dullness, thoracic type of respiration, absence of peristaltic sounds. The child's general condition and pulse were fair, considering the advanced local symptoms. A diagnosis of intestinal perforation during typhoid fever was apparently beyond dispute. Dr. Miller saw the case a few minutes later and reached the same conclusion. The child was at once transferred to the surgical ward and the operating table. After ether anesthesia and the usual incision, the abdominal cavity was found to be filled with purulent fluid of slightly fecal odor, and there were evidences of general peritonitis. The ileocecal region was at once sought for, and a search from below upward soon showed the presence of a perforation in the ileum, about eight inches from the colon, small in size, about the diameter of the lead in an ordinary lead pencil; through the perforation feces were oozing. The area was quickly turned in by a double row of interrupted Lembert sutures, which took good hold in the undamaged gut-wall on either side, the bowel in the neighborhood was wiped free of lymph, returned, and the abdominal cavity freely irrigated with saline solution. The appendix was seen to be normal. Gauze drainage in various directions and two drainage tubes were introduced, and the wound left open. At the conclusion of the operation the temperature was 99.8°F., pulse 132, respiration 56. The child reacted quickly, the saline infusion and enema of black coffee being hardly needed to establish reaction.

The after-history was not different from that of many cases of operation in the presence of general peritonitis. There was decided improvement following the abdominal cleansing for twelve hours. Nine hours after operation it was noted that the child was comfortable, the abdomen flattening, the temperature again up to 102°F., the general condition improved. The wound was draining freely by the gauze wicks. At the end of the first day, however, vomiting and other symptoms of peritonitis occurred, the pulse weakened and at the end of seventy-two hours the patient died. A Widal examination of the blood was made and found positive.

Autopsy was not made, but an examination of the abdominal cavity through the wound showed that general peritonitis was present in high degree, that the typhoid ulcers were limited to the last two feet of ileum, and that the perforation was firmly occluded and water tight.

In the Annals of Surgery for July, 1903, Chas. A. Elsberg, of New York, published a paper on the surgical features of perforation of the intestine in typhoid fever in children, and reported a case of successful operation in a child of six and one-half years, which was the youngest case in which operation for this condition had been done, of which he found record in a study of 289 operative cases, 25 of which were in children under fifteen years of age. Some of his conclusions, reached by a study of the literature of the subject, I will quote. As to the frequency of perforation in typhoid fever in children, Elsberg found by combining the statistics of Morse, Holt and Fitz, that 1,504 cases in children gave a percentage of perforations of 1.2, and taking the percentage in adults as from 1 to 2½ per cent., concludes that this complication is not much less frequent in children than in adults, and certainly not as infrequent as Henoch, Baginsky and Morse claim. He acknowledges, however, that all of his cases were between six and one-half and fifteen years, and that in children under this age, and in infants, perforation is very rare, and operation unrecorded. Fourteen of the 25 operative cases were in children between nine and twelve years.

According to Elsberg again, the prognosis after operation is better in childhood, indeed more than twice as good, sixteen recovering and nine dying, a mortality of 36 per cent., as contrasted with 771.69 in adults. His other conclusions are that symptoms of perforation do not differ essentially in children and in adults, and that while recovery exceptionally takes place without operation, the treatment should be surgical.

According to Holt, in 1,028 cases perforation occurred twelve times, or 1.1 per cent., and is even more infrequent than hemorrhage in childhood. Koplik merely states that perforation is rare; in 1 case he observed there were symptoms of perforation, but operation failed to show it, and the patient recovered.

In the Children's Hospital perforation rarely finds its way into the surgical ward. Indeed, I know of but one other case which has been operated upon there, and this patient was admitted in a moribund condition.

As to the symptoms in my case it will be seen that the intestinal symptoms were more or less predominant throughout the course of the disease, and the disease was not of the nervous type, which, according to Holt, is more common than is the intestinal in childhood. The history of perforation was fairly clear and, taken in connection with the symptoms present when I saw the case, made the diagnosis an easy one. The exact time of perforation could not be fixed, but it was probably at least twenty-four hours before operation.

The Differential Diagnosis of German Measles.—W. L. Somerset in the *New York Medical Journal,* May 23, 1903, presents the following: The eruption of german measles is essentially macular, and only by confluence comes to resemble that of scarlatina. When the eruption is less profuse and the individual macules retain their identity, the resemblance is rather to measles. German measles differs from measles in giving a leukocytosis. In the more marked cases—*i.e.,* with a more profuse eruption, not necessarily more severe clinically—the resemblance is rather to scarlet fever, and, without any doubt, german measles and mild scarlatina may resemble each other very closely. There is no one symptom on which we may rely. German measles never gives a "strawberry" tongue; scarlet fever does not always give it. In german measles, the postcervical glands are often enlarged—by no means invariably. Pharyngitis is common to both diseases; conjunctivitis is exceptional in german measles; either may give a flushed face. Taken as a whole, however, the german measles case will have peculiarities that will not fit into our conception of scarlet fever—varied though that be. The temperature, pulse, and clinical condition will not "match" the rash in scarlatinal proportion. A german measles eruption, furthermore, is very likely to be patchy—intense over one area and nearly, or entirely, absent over an area close by. German measles is more likely to be mistaken for scarlet fever than is scarlet fever for german measles.

Clinical Memoranda.

REPORT OF A CASE SHOWING CEREBELLAR SYMPTOMS FOLLOWING A FALL.*

BY SAMUEL McC. HAMILL, M.D.

Philadelphia.

S. W., aged two years and nine months, was brought to the Dispensary of the Polyclinic Hospital on the 28th of October. His family history was good; he had never had snuffles, skin eruptions nor convulsions. He had had pertussis, varicella, measles and several mild attacks of bronchitis. His diet had been defective and had included the use of tea and coffee.

His present history is as follows:—Three weeks prior to admission, he was pushed over in the street, striking his head against a curbstone. He suffered no immediate ill effects from the fall. Three days before admission and two days before his illness began he fell down five steps, striking the back of his head. He cried for a short time, but did not seem to suffer any marked effect from the fall. He had no symptoms during the following day and went to bed the night before his illness perfectly well. He cried several times during the night. The following morning, on waking, he was very pale and refused to walk. When placed on the floor he stood alone but, in attempting to take a few steps, he fell over. He vomited after eating his breakfast and had a poor appetite for the next forty-eight hours. He has had some questionable pain in his knees and in his calf muscles. His stools have been normal; he had no fever at the time the illness began; and, barring his lack of appetite and inability to walk, he has been in much the same condition as usual. On the day he came to the hospital, his appetite had improved; he seemed perfectly happy and had not vomited since the previous day. There had been no evidence of head pain at any time. For the past eight weeks he had had a mild coryza and mild conjunctivitis. He had had no discharge from his ears. There had been no recent acute illness.

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* The patient was exhibited to the Philadelphia Pediatric Society, November 11, 1902.

The physical examination showed a well-nourished boy of good color. When placed on the floor, he was able to stand alone but when he attempted to walk he had a distinct staggering gait with a tendency to fall to the left; he did fall occasionally and always to the left. When rising from a sitting position, he frequently fell backward. There was some incoordination in the movements of his arms, more marked on the left side. There was no evidence of paralysis of the muscles of the eye, no difference in the size of the pupils and no nystagmus. His knee jerks were very much exaggerated; he had no ankle clonus. Babinski's reflex was present. There were no sensory changes and no loss of power. The abdominal, cardiac and pulmonary examinations were negative. He had a geographical tongue, a slight redness of the pharyngeal mucous membrane and enlarged, but not inflamed, tonsils. He had a mucopurulent discharge from his nose but no laryngeal symptoms. His conjunctivitis was slight and there was no evidence of a conjunctival membrane. The temperature in the groin was 97.5°F.

The father made the statement on the occasion of the first visit (the second day of the illness), that the child's condition was then improved. On his second visit to the dispensary, two days later, it was recorded that his condition was unchanged. On the afternoon of that day Dr. Spiller saw him with me and at this time his gait seemed to show some improvement and his knee jerks were less marked. He was seen again two days later (November 1st), and at this time his condition was still further improved. There was no evidence of pain; he was perfectly happy and contented; his appetite good and his digestion normal.

He returned to the dispensary several days later. His staggering gait had disappeared almost entirely; the father thought his gait normal.

The case presents some interest from the standpoint of diagnosis. The symptoms were evidently of cerebellar origin. The conditions which suggested themselves were:—a possible cerebellar tumor; congestion or hemorrhage into the cerebellum in consequence of the injury, or possibly an encephalitis. The previous good health of the patient, the sudden onset of the condition and the absence of practically all symptoms except the incoordination, led us to exclude the likelihood of cerebellar tumor. The absence of fever, and the recovery, especially the rapidity of the recovery, argues against an encephalitis, although, as has been definitely demonstrated by Oppenheim, it is quite possible for cases of encephalitis to recover. The subsequent history of the case makes it evident that the view that it was either a condition of congestion with commotion or hemorrhage is probably correct.

In March, 1903, the patient was entirely well and had had no recurrence of the symptoms at any time.

When the patient was shown before the Pediatric Society it was suggested that there might have been swelling of the Eustachian tube causing occlusion and pressure upon the labyrinth by exudates in the middle ear, which would produce vomiting and staggering gait lasting for twenty-four hours or more. The objection to this interpretation, as was suggested at that time, was the marked persistent and prolonged ataxia (one week), and the absence of all signs of middle ear disease. The patient was seen five months after the onset of the illness. He was then and had been entirely well since his last visit.

Ultramicroscopic Examination of Fluids.—The new microscope, which enables the detection of ultramicroscopical particles by lateral focal illumination has been put to the practical test in medicine for the first time by E. Raehlmann (*Münch. med. Woch.*, December 1, 1903), with most astonishing results. Solutions of various dyes were found to contain myriads of small particles, shining in their own color, in suspension. In mixed colors, the particles of all the ingredients could be identified, but occasionally new combinations were formed. A great future is promised for this discovery in the detection of contamination. Most histologists believe that animal tissues stain readily because they become impregnated with the dye, but it now seems more probable that the fine particles simply coat the delicate structures. Certain non-colored organic substances were then examined and it was found that albumin solution, though filtered three times, also contains the albumin in finest suspension. A new method of quantitatively estimating the amount of albumin suggests itself. In a 1 per cent. solution it is impossible to obtain details, since the particles lie too closely crowded; in a dilution of 1 in 100,000 they become distinct and are still visible when the amount of albumin is only two parts in ten million. Their size varies and the smallest are just visible as fine points. They are all engaged in active motion, which becomes less, the higher the dilution. In solutions of dextrin, gum arabic, glucose and lactose, particles of similar appearance are found. With glycogen they possess a characteristic grayish-white color, and a peculiar motion, which probably points to a special form of solution; as soon as a small amount of diastase is added they alter their characters immediately and appear like those of dextrin.—*Medical News.*

A CASE OF INFECTIOUS ENDOCARDITIS, PERICARDITIS, MULTIPLE ARTHRITIS AND PULMONARY INFARCTION, WITH RECOVERY.

BY ROSA ENGELMANN, M.D.,
Assistant Clinical Professor of Pediatrics (extra mural), Rush Medical College;
Medical Inspector of Health Department, Chicago, Ill.

In view of the fact that such cases usually terminate fatally, I am indebted to Dr. Bertha Van Hoosen for the privilege of reporting the history of one that recovered.

The patient, a boy, fourteen years old, was born of healthy parents, and was never sick. His grandfather was hale and hearty at eighty years of age, "still chopping wood." Two weeks before the present illness some patches appeared on the boy's tonsils, but household remedies relieved the tonsillitis, and the boy soon returned to school. Shortly after visiting a refrigerating plant and cold-storage house he returned home complaining of general aches, and pains in his left ankle, due to what he and his parents thought to be a sprain. After going to bed supperless a neighboring physician was called in who made light of the trouble. Three days later Dr. Van Hoosen found the boy delirious, cyanotic, and suffering from marked dyspnea. His temperature was over 103°F., and he gave the impression of being dangerously ill. Accordingly, he was brought into the hospital, and was found greatly prostrated, very restless and anxious from air hunger. The respiration was hurried and shallow; the pulse small, rapid and irregular. The lungs were normal; the heart was beating tumultuously and could be heard absolutely splashing in the pericardial fluid, although a few friction sounds were heard at the right cardiac border. The area of dullness was tremendously increased. There were pain and tenderness in the epigastrium and hepatic region; these signs along with dullness suggested gall-bladder infection. There was pain and swelling in the right ankle also. A few days later I could find no indication of hepatic disturbance.

Next, the right knee began to ache and to swell, and such dangerous attacks of orthopnea and heart failure supervened that the boy was thought near death several times. This air hunger and distress were preceded and followed on the eighth day of the illness by a bright red frothy pulmonary hemorrhage, and then there was a harassing cough with blood-flecked expectoration. The patient called attention to pain in the apex of the left axilla and was unable to lie upon that side. Even the rolling and slight lifting required to make the necessary physical examination led to dangerous dyspnea, cyanosis and collapse. Percussion in the left axilla elicited circumscribed dullness, and there was in the same region bronchial breathing accompanied by crepitant râles. The pulse was very irregular and feeble. Absolute rest, stimulation and oxygen inhalations revived the boy.

On the thirteenth day of the illness the boy had a second small red frothy hemorrhage from the lungs, and there was pain then referred to the back of the left lung. On examination in this region bronchial breathing, crepitant râles, pleuritic friction, increased vocal fremitus and dullness were made out. As the pericardial fluid diminished it was possible to diagnosticate an endocarditis with mitral regurgitant and pulmonary murmurs, and loss of the pulmonic second sound. Septic endocarditis with consequent pulmonic embolism and infarction seemed to explain the conditions, and Dr. Wm. Quine agreed in this diagnosis.

The left knee finally became involved and one elbow. A third pulmonary hemorrhage took place on the twenty-fourth day, and subsequently the breath sounds were decidedly diminished over the entire right lung; in twenty-four hours blowing sounds could be heard. This involvement was evanescent, and from this time the boy's improvement was rapid. All gross signs of pericarditis speedily disappeared and the heart returned to nearly its normal proportions. It was some time, however, before he could be placed in a sitting posture without discomfort. Early in the attack the blood showed 52.9 per cent. hemoglobin, 3,800,000 red cells, 10,000 white cells with some increase in the eosinophiles. A blood culture was negative. The urine showed at first a trace of albumin and some hyalin casts, both of which disappeared from the later specimens.

An uninterrupted convalescence and recovery occurred. Before leaving the hospital the pericarditis had entirely cleared up, the fluid and frictions had disappeared. A mitral regurgitant murmur persisted and was heard a year and a half later. At this time there was full compensation by slight hypertrophy of the ventricles. The youth is in good flesh and spirits, able to take a ten-mile walk daily; except for his murmur he is in prime condition.

FOREIGN BODY IN THE ESOPHAGUS.

BY LEWIS M. SILVER, M.D.,

New York.

Gustave A., twenty months old, born in Hempstead, L. I., of French parentage, was brought to the Vanderbilt Clinic, Department of Children, service of Professor L. Emmett Holt, on January 9, 1904, with the following history.

The mother stated that on December 26, 1903, at 8.30 P.M., the child was lying across her lap, while she was changing the napkin. It held in its hand a penny. Suddenly the child put its hand to its mouth, and then the mother noticed that the penny had disappeared.

Immediately the child began to cough and made efforts to expel the coin. The mother gave a teaspoonful of syrup of ipecac, which caused the child to vomit profusely, but the penny was not ejected.

On December 27th, at 2 A.M., five and one-half hours after, two teaspoonfuls of castor oil were given, but this was followed by no result, and as the child was not inconvenienced by its accident the mother desisted from further medication. At no time was the child cyanosed, nor was the respiration interfered with in any degree.

For the next fourteen days the child played about the house, showing no symptoms. There was no pain, no fever, nor any evidence of blood. Sleep was a little restless, but the respiratory movements were quite natural. The bowels moved regularly. All solid food, as bread, potato and soups, was rejected as soon as swallowed, but milk and water remained down. Of the former, the child, bottle-fed, took two quarts daily. There was loss of flesh, but as the weight before the accident was not known, the exact loss could not be determined. Weight on admission, 19 pounds 9½ ounces.

The mother stated that during the fifteen days the penny was lodged in the child, he would frequently make efforts as if he were trying to swallow something. The voice was not changed when the child cried.

As nothing definite could be stated to the mother, who was positive that the coin had not been passed, as proven by the careful examination of each movement, the child was taken to the office of Dr. H. M. Silver in order that an examination might be made by the x-ray.

On January 10th, the examination was carried out, and by the aid of the screen the penny could be seen in the median line of the body on a level with the cricoid cartilage, presumably in the esophagus. The child was then chloroformed and a plate exposed for two and one-half minutes, which, when developed, showed the coin in the locality as determined by the screen. (See Figure 1.)

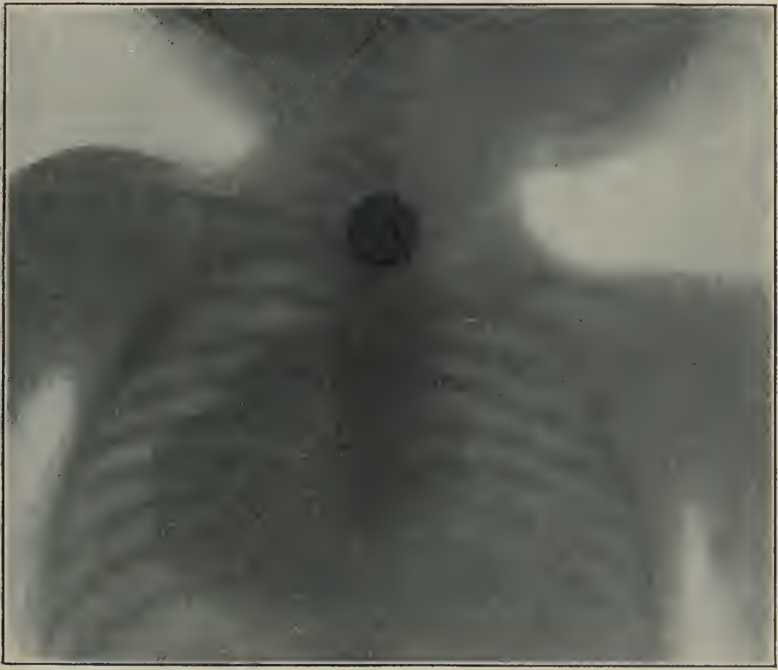

FIGURE 1. SKIAGRAPH SHOWING COIN (ONE CENT) IN ESOPHAGUS.

Before the child came out of the anesthesia a coin catcher was passed down into the esophagus and on its withdrawal the penny was seen in its grasp. The child showed no signs of reaction and when last seen, on January 22d, was looking well and gaining in weight.

In connection with this case, and in contrast to it, the following history, kindly furnished me by Dr. H. M. Silver, is presented.

"B. W., aged eighteen months, was born at Riverhead, L. I., of American parentage. One day while the child was playing on the floor the mother heard a strange choking sound. She picked the baby up and soon the severe paroxysm passed off, the baby appearing to be as well as ever. Suspecting the child might have swallowed something she consulted Dr. A. E. Payne, [redacted], of Riverhead, who advised her to feed the baby on bread and potato and to consult Dr. H. M. Silver, of New York, for examination with the x-ray.

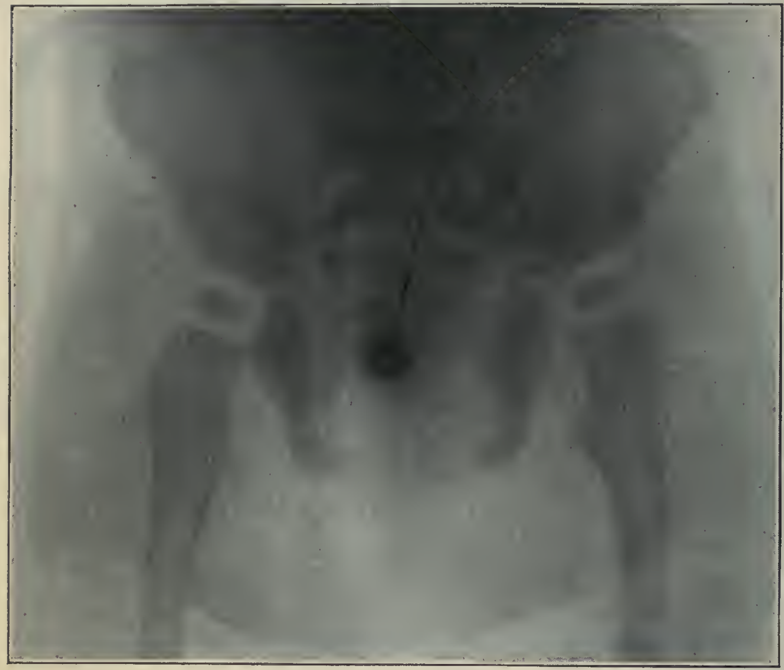

FIGURE 2. SKIAGRAPH SHOWING SCARF-PIN IN RECTUM. THE PIN WAS 2½ INCHES LONG AND ITS HEAD ¼ X ⅜ INCH.

"The baby was brought to the office twenty-four hours afterward, placed under the influence of chloroform and a plate exposed. When this was developed it showed the foreign body high up in the rectum. (See Figure 2.)

"In twelve hours after the plate was exposed, the foreign body was passed without pain, surrounded by a hard mass of fecal matter. It proved to be the father's scarf pin; measuring two and one-half inches in length it had passed through the alimentary canal, head first, without producing any discomfort."

The history of both of these cases made it appear certain that the foreign body had not been drawn into the respiratory tract, for at no time was there cyanosis nor difficulty in breathing. Physical examination of the lungs in each case was negative. It was, therefore, suspected that the foreign body was somewhere in the alimentary tract. Examination by the x-ray confirmed the diagnosis.

We thus have two foreign bodies of totally different characteristics; the one, with all the possibilities of remaining lodged in some portion of the alimentary canal, passing through without difficulty; the other remaining in the esophagus for fifteen days and causing no distress. The position of the coin, as shown in the cut, was perpendicular, the position of least resistance to passing fluids and most favorable for removal.

One author, W. J. Taylor, mentions the removal from a child aged sixteen months of a metal clasp, which had been swallowed seven months before external esophagotomy was performed and the clasp removed, the wound healing by granulation in twenty-one days. He mentions the case as interesting on account of the age of the child, the length of time the foreign body had remained in the esophagus and the quick recovery from such a severe operation.

He decries any attempt to remove foreign bodies by mouth, unless they are smooth and have been in position no longer than twenty-four hours, and possibly forty-eight hours. No attempt should be made without previously determining the exact situation of the foreign body by the use of the x-ray, further assisted by the taking of a photograph, the child being fully anesthetized in order to keep it quiet.

Still, one cannot always rely on the x-ray, for the presence of the heart shadow or that of the spinal column might interfere in determining accurately the location of a foreign body, a point which has been emphasized by Killian, *British Medical Journal,* August 30, 1902. In our case neither objection prevailed. The same author reports the failure of the x-ray in revealing the shadow of a vulcanite tooth plate eight weeks after it had been swallowed by a woman aged fifty-two years. A probe revealed its position in the esophagus. Killian prefers esophagoscopy to either the x-ray or the probe.

ARCHIVES OF PEDIATRICS.

MARCH, 1904.

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LESSONS FROM OBSERVATIONS MADE ON INFANT FEEDING.

For over two years investigations were made by physicians connected with the Rockefeller Institute for Medical Research, the New York Department of Health, the Carnegie Laboratory and also the Good Samaritan Dispensary, into the feeding of cow's milk to healthy infants in tenement-houses. For comparison, however, a number of institutions were also included. The results of these elaborate investigations were embodied in a report which Drs. Park and Holt presented before the Association of American Physicians and which was published in the December, 1903, issue of ARCHIVES OF PEDIATRICS.

Excluding all imperfect cases, and those whose records were not extended enough for comparison, 632 babies were studied and the observations made were given in the report.

In view of the care taken in the bacterial investigations, as a preliminary step to determination of the factors that cause summer diarrhea, it is interesting to record that no special varieties of bacteria were found in untreated milk which seemed to have any especial causative importance. The varieties of bacteria found in raw milk were many, but they did not seem pathogenic. Cases of indigestion were observed where pasteurized milk more than thirty-six hours old was used and the bacteria were found to be numerous, mostly of the spore-bearing varieties.

The observers were confronted with two facts that limited the field of their investigation; the first was the unexpected difficulty in finding fewer bottle-fed babies than the physicians connected with hospitals and dispensaries had expected to see, and the second that proprietary foods were not in general use in the tenement-houses. The clinical investigations were carried on with the following forms of milk:—(1) Condensed milk; (2) "store milk"; (3) bottled milk; (4) milk from pasteurizing establishments and boiled milk from a dispensary.

In a study of the infants observed, the bad results from the use of condensed milk were most apparent. Two cases out of 48 died during the winter, and 14 out of 70 cases died during the summer. This was a worse showing than that made by the "store milk." In this series there were fifty-five children without any mortality in the winter, and seventy-nine children in the summer with a mortality of fifteen. More cases did badly on store milk in the summer than on condensed milk, although this difference was not striking. It was noted that babies fed on condensed milk succumbed rapidly to disease.

Pasteurized and bottled milk from the milk depots and dispensaries gave good results: 59 cases received this milk in the winter without a death. In the summer 145 cases had a mortality of four. A limited supervision was exercised in these cases as the mothers reported at the dispensaries and were furnished milk in separate bottles suitable for each feeding.

The figures given where bottled milk was used were not satisfactory. The milk was classed as "good bottled milk" and "best bottled milk." Sixty-eight babies were fed the former brand in the winter and three died. Ninety-eight received the same grade of milk in the summer and nine died. Six babies were given the best milk in the winter and twelve in the summer without a death. These latter figures were, however, too few for accurate comparison.

In a series of cases where comparison was made between a group of babies fed on pasteurized milk and a group fed on a fair grade of raw milk, both kinds being distributed from a central station, it was observed that the raw milk seemed to cause more illness, and the duration of diarrhea was three times as long as when the pasteurized milk was given. The bacteria in the raw milk averaged in a morning count, 1,200,000 per cc. and in the pasteurized 1,000 per cc.

The cheap store milk pasteurized showed a high bacteria count and gave the worst results with the production of diarrheal diseases and a great many deaths.

The socalled "good milk" was not of the high grade of the "best milk." This good bottled milk was not as successful as had been expected it would be.

A noteworthy comparison made in the author's tables is shown in the figures of the breast-fed babies, who numbered thirty-one in the summer series without a death. In the table of summer cases 217 were infants under six months with a mortality of 13 per cent. One hundred and ninety-one were between six and twelve months with a mortality of 8 per cent. A total of 50 cases of diarrhea were observed in the three months of June, July and August with nine deaths. Not one of these was a baby entirely breast-fed.

In a summary of the collective investigation the authors drew certain conclusions relative to the immediate effects of the milk. It was observed that during cool weather the morbidity and mortality were not appreciably affected by the kind of milk nor by the number of bacteria. In summer, however, the influence of poor milk, particularly condensed milk and that from stores, was decided in causing illness and death. The number of bacteria which may accumulate before milk is harmful differs with the character of the bacteria present, the age of the milk and the temperature at which it is kept. No special varieties of bacteria were found in the specimens of untreated milk examined which seemed to have any importance in relation to summer diarrheas. When milk had been kept cool the injurious effect of bacteria was found to be less with every month over one year of age.

With milk of average quality it was observed that during the warm weather those infants who were fed with milk that had been previously treated did better than those infants who had raw milk.

It was found unnecessary to give close percentage modifications of milk, a matter of extreme importance in the care of a large number of tenement-house babies.

It was also observed that fresh, clean milk in sealed bottles, and milk from central stations where there was a constant oversight, gave the best results. The latter method of feeding is urged as being less expensive, and under a closer surveillance than the former and, therefore, better fitted for the average tenement-house mother.

Most important of all is the plain statement that breast-feeding should be encouraged by every means and not discontinued without good and sufficient reasons. The comparatively few cases of illness among the nursing babies recorded bear out this physiological truth.

Investigations along these lines should be undertaken wherever possible; for such collective statistics become more valuable with every successive season of hot weather.

COLLECTIVE INVESTIGATION BY THE GESELLSCHAFT FÜR KINDERHEILKUNDE OF BARLOW'S DISEASE (INFANTILE SCURVY).

At the meeting of the Gesellschaft für Kinderheilkunde, held in Cassel, Germany, last September, a commission was appointed to study the question of infantile scurvy. This commission is composed of Drs. Czerny, Heubner, v. Ranke, Spiegelberg, Schlossman and v. Stark. All research will be carried out in a most thorough and scientific manner. A complete study of scurvy as it exists in America was made by the American Pediatric Society in 1898. This investigation was in a sense retrospective; and many of the cases were reported incompletely. The German physicians wish to have the records of cases studied according to a plan outlined by the Commission. The questions formulated by the Commission are given below; and the Commission request all observers to follow this outline in reporting cases. This investigation will last several years; but reports should be sent to the Commission not later than the first of June each year.

The Commission would appreciate the co-operation and help of their American colleagues in this undertaking, and will give due credit to all who report cases.

Dr. Henry L. K. Shaw, of 198 Washington Avenue, Albany, N. Y., will be glad to forward to Germany notes of American cases.

It is requested that the following outline be employed in reporting new cases:—

(1) Name of child, or initials.

(2) Age and sex.

(3) Social and hygienic surroundings. (Legitimate? social position of parents, dwelling, care, hereditary tendencies.)

(4) Previous diseases.

(5) Date of beginning of medical observation.

(6) How long before observation had the disease existed, and what were the first symptoms?

(7) Had the disease been treated previously by a physician? For how long a time, and with what result?

(8) Clinical examination in detail. (*a*) Nutrition (if possible with weight), color of skin, nervous system, pains. (*b*) Osseous system. Are evidences of rickets present? (*c*) Condition of the gums. How many teeth? (*d*) Exophthalmos? (At what time?) (*e*) Have hemorrhages been observed? From which organs? Mention especially ecchymoses in the skin and mucous membranes. How long have they occurred? Was an examination of the blood made? Result? (*f*) Examination of the urine. (Albuminuria, hemorrhagic nephritis.) When possible, the results of microscopic examination. (*g*) Digestive organs. Number and character of movements. Gastroenteric disturbances. (*h*) Temperature range.

(9) Food administered to child. (*a*) Milk from mother, or wet nurse? How long alone? How long with supplementary food? (*b*) Milk of cows or other animals. (See Question 10.) (*c*) Mixtures purchased ready to use, condensed milk, infant's foods or similar preparations? which? As supplementary food or the entire nourishment? (*d*) Was this food sufficient, insufficient, or overabundant? (*e*) What food, or food mixture, was the child taking at the time the first symptoms of the disease appeared?

(10) When nourished by milk of cow or other animal. (*a*) Herd milk? Milk from a single cow? Ordinary shop milk, certified or inspected milk? (*b*) Was the milk raw, boiled, pasteurized, or sterilized? (*c*) Was the milk sterilized at the boiling point, or at a higher temperature, and for how long? (*d*) Was the sterilization or pasteurization done at home, in a nursery, or charitable institution, or in a dairy? If heated at a dairy, was the milk *again* sterilized or pasteurized before using? (*e*) Character of food given the cows. Stall-fed or partly meadow? If entirely stall-fed, is the food dry or partly green? What is the nutritive and other value of the food?

(11) Treatment of the disease.

(12) Course of the disease.

(13) If fatal, it is especially desirable to have (*a*) a complete autopsy report; (*b*) a microscopic examination, if possible, of one or more of the affected bones. If this cannot be conveniently made, one or more of the affected bones can be sent in a 10 per cent. formalin solution to Dr. R. M. Pearce, Bender Laboratory, Albany, N. Y., and he will be glad to make such examination.

(14) During this period of observation, has this disease occurred with undue frequency, and under what conditions?

(15) Accurate description of the place (geographical location) of the observation.

(16) Name and address of the observer.

Sudden Death in the Newly-Born.—Hofmeister (*Münch. med. Woch.,* Vol. L., No. 35) describes 3 cases to show the liability to error in these cases. The births occurred under his eyes and only the most careful examination disclosed even a possible cause for the death of the child just before or after delivery. In one the microscope showed minute changes in heart and lungs, possibly rendering them unable to adapt themselves to extra-uterine life; in another some of the blood vessels in the placenta were obliterated; in the third, meconium was found in bronchi and lungs and yet the child was stillborn. The death might easily have been unjustly ascribed to the mothers under other circumstances.—*Journal American Medical Association.*

The Acid Intestinal Dyspepsia of Infants. — After reviewing the literature on the acid intestinal dyspepsia of nursing infants, Raczynski (*Wien. Klin. Wochenschr.,* March 19, 1903) reports 7 cases with analyses of the mother's milk in each case. From detailed observation of 4 other cases he concludes that diseases occur among nursing infants in which the feces contain amounts of fatty acids, causing diarrhea, insomnia, etc. The formation of these acids is not due to the chemical composition of the food. The intestinal dyspepsia is due to the acids, the presence of which depends on bacterial vegetation. This increased acidity of the contents of the intestines causes difficult assimilation of fat. The cause of the condition is probably overfeeding. The treatment consists in the administration of calomel, liquor calcis, calcium phosphate, or simple cow's milk, given from time to time. —*Philadelphia Medical Journal.*

Bibliography.

Self-Cure of Consumption without Medicine; with a Chapter on Prevention of Consumption and other Diseases. By **Chas. H. Stanley Davis, M.D., Ph.D.** Pp. 176. New York: E. B. Treat & Co., 1904. Price, 75 cents.

The purpose of this book is perhaps best given by the following quotation from the preface: "The idea that consumption is an incurable disease is still widely prevalent among the people, but there is no reason why any person, not advanced beyond the second stage, should die of the disease. The object of this book is to show how consumption, from its first beginnings to its last stages, can be cured in at least 95 per cent. of the cases, and this without the use of medicine." The author has well stated that the most important sanitary problem of today is the prevalence of pulmonary tuberculosis, but proper measures for the suppression of this disease cannot be enforced until the public in general, and especially that portion of the people which either has the disease or is intimately associated with those suffering from it, becomes educated on the subject. Allowing somewhat for the advanced opinion that consumption is so largely a curable disease, there are many good rules and suggestive hints in this volume that make it a useful book for the general public. The directions as to breathing, diet, open air life and hygiene are taken largely from the rules of modern sanatoria, and, therefore, express a consensus of opinion helpful both to the doctor and the patient.

Récherches Cliniques et Therapeutiques Sur l'Épilepsie, l'Hysterie et l'Idiotie, Compte-rendu du Service des Enfants Idiots, Épileptiques et Arriérés de Bicêtre pendant l'année 1902, by Bourneville. Pp. 304. Paris: Felix Alcan, 1903.

This annual report of the schools at Bicêtre is the twenty-third volume of the kind issued by Bourneville as Director of the institution. The series will form a lasting monument to the brilliant results of medico-pedagogical training in France under the splendid leadership of Bourneville and his collaborators.

As is customary in these reports, the first part is devoted to statistics of admissions, discharges and the detailed progress of the different branches of the schools at Bicêtre and at the Fondation Vallée. A systematic digest of the workings of these departments ought to be of inestimable value to those contemplating the establishment of secondary schools for backward children in New

York City's school system. Much could be gained from these reports in the practical application of medico-pedagogical training to our school system in general.

The second part of this report is, however, of special interest to pediatrists, neurologists and those interested in the scientific study of the large institutional class of psycho-asthenics. Space does not permit us to more than mention the titles of the clinical, therapeutic and anatomico-pathological studies undertaken at the Bicêtre schools during the year and published in this volume.

I. Idiocy of the Mongolian Type; Pulmonary Tuberculosis.—Tubercular Appendicitis.—Bourneville. II. Histological Examination of the Brains of Two Mongolian Idiots.—Philippe and Oberthur. III. Congenital Idiocy Probably Aggravated by Alcoholism of the Nurse, Which Induced a Meningitis: Mongolian Type.—Bourneville and J. Boyer. IV. Idiopathic Epilepsy Ending in Suicide; Fracture of the Atlas and Destruction of the Medulla; Appendix Abnormal.—Bourneville and L. Morel. V. Action of Alcoholism on the Production of Idiocy and Epilepsy.—Bourneville. VI. Complete Idiocy with Diplegia more marked on the Left Side, Symptoms of Atrophic Sclerosis Predominating in the Right Hemisphere (Convolutions and Lobules of the Insula).—Bourneville and Lemaire. VII. Microcephalic Idiocy, Dwarfism and Club Hand.—Bourneville. VIII. Myxedematous Scoliosis.—Bourneville. IX. Technique for Examining Reflexes.—Crouzon. X. Complete History of One Case of Myxedemic Idiocy (Infantile Myxedema) 1890-1902.—Bourneville. XI. Profound Idiocy with Dwarfism and Infantilism; Considerable Improvement.—Bourneville. XII.—A Case of Tic Convulsif; Recovery.—Bourneville and Poulard. XIII. Idiopathic Epilepsy; Recovery.—Bourneville and Max Blumenfeld. XIV. Partial Hereditary Congenital Discoloration of the Hair (Vitiligo).—Bourneville. XV. Hemorrhages of the Skin and the Mucous Membrane During and After an Attack of Epilepsy; Their Analogy with the Ecstatic Stigmata.—Bourneville. XVI. Treatment of Epilepsy by Physical Means (Hydrotherapy, etc.).—Bourneville. XVII. The Influence of Unhygienic Occupation in the Production of Chronic Nervous Diseases.—Bourneville. XVIII. The Role of Consanguinity in the Etiology of Epilepsy, Hysteria, Idiocy, etc.—Bourneville. XIX. Statistics in Strabismus. XX. Insanity of Adolescence.—Bourneville and Ambard. XXI. Pronounced Idiocy, Violent Outbreaks, Mania with Self-mutilations.—Bourneville and Max Blumenfeld. XXII. Cerebellar Atrophy, Idiocy, Cerebral Diplegia.—Bourneville and Crouzon. XXIII. Hypothermia. XXIV. Asymmetry of the Cerebral and Cerebellar Hemispheres.—Bourneville.

The clinico-pathological studies are accompanied by photographs of patients and anatomical specimens.

Milk Modification Chart for the Instantaneous Calculation of Percentage Milk Mixtures. Designed by **Thompson S. Westcott, M.D.** Philadelphia: G. D. Young, 1903. Price, $2.00.

The chart consists of two concentric cardboard circles, one large and one small, mounted on a seven-inch square of a little heavier material. It is assumed that all mixtures are to be made from cream of 16 per cent. fat, and milk of 4 per cent. The large circle is labeled milk, the smaller cream. Each has an aperture marked "Fat," which by revolving the circle may be made to indicate any percentage of fat from 0.25 to 4. A series of radii running over both cards are similarly marked to indicate any percentage of proteids from 0.25 to 4. In use the two circles are set to show the desired percentage of fat, when upon the radius, marked by the desired per cent. of proteid, the proportions of cream and milk to be used can at once be read off. About another space on each radius is set a series of figures, which by a simple arithmetical procedure enable one to determine the quantity of milk-sugar to be added to the mixture to give any percentage of sugar from 5 to 7 in the result.

At first sight the chart is likely to suggest an arithmetical presentation of the zodiac or a wheel of fortune, but a few minutes' earnest consideration shows it to be a marvel of painstaking ingenuity, which ought to be of real service to the many who still struggle hopelessly with the details of percentage milk mixtures. Given cream and milk of the requisite percentages the chart will enable one to make almost any mixture that could be desired.

For use at the desk or in laboratories it could hardly be equaled. It is, of course, open to the objection that the proteid percentage of both milk and cream, but particularly the latter, is assumed to be 4; whereas, in the case of the cream, at least it is actually nearer 3. The proteid in the mixtures would, therefore, fall somewhat short of the amounts calculated. However, the same objection can be urged against practically all the systems or schemes for such calculations, and we are very far from believing that mathematical accuracy is essential to success in the matter.

Society Reports.

THE NEW YORK ACADEMY OF MEDICINE.—SECTION ON PEDIATRICS.

Stated Meeting, January 14, 1904.

DR. DAVID BOVAIRD, JR., CHAIRMAN.

A CASE OF DIABETES INSIPIDUS IN A CHILD OF NINE AND A HALF YEARS.

DR. E. H. M. SILL reported this case. The patient was a boy of Austrian parentage, and his family history was negative. He had been well up to eighteen months previously, when he was observed to be excessively thirsty and passing large quantities of pale urine. There were pains in the lumbar region, he was irritable and easily fatigued. The mouth was dry and there was but little sweating. The daily quantity of urine had varied from five to twelve quarts. On examination of the urine, it was found to contain neither albumin nor sugar, but the specific gravity was 1,005.

DR. SILL said that this was a very rare affection in children. Of one series of 35 cases, 21 occurred under the age of ten years, and 9 under five years of age. This disorder was most apt to make its appearance after fright, sunstroke and injuries to some portion of the cerebrospinal axis. The duration was indefinite. Out of 77 cases reported by Roberts, 16 recovered completely, 47 were improved and 14 died. Ergot, valerian and electricity were considered useful in the treatment.

DR. SARA WELT-KAKELS reported 2 cases in children that she had observed. One was a girl of nine and a half years, in whom the disease had existed three years at the time of coming under observation. The skin was dry, the appetite poor, and her condition had been made temporarily worse by foolishly restricting the quantity of water taken. The specific gravity of the urine varied between 1,000 and 1,003, and the quantity of urea was 0.1 per cent. During the ten months the girl was under treatment she gained about eight pounds. It was subsequently learned that the child developed an oculomotor paresis and had finally died after a few days' illness. The best results in the treatment of this case were secured by the administration of antipyrin.

The other case occurred in a six-year-old boy. There were no symptoms except the great thirst and the polyuria. He was passing ten of twelve quarts of urine in the twenty-four hours, or about two-thirds his body weight. This quantity of urine was somewhat diminished by the use of antipyrin. The urine was faintly acid, almost colorless, and was sugar-free, as proved by a number of tests. The quantity of urea was about eight grams above the normal.

Dr. James J. Walsh said that he had met with this affection in a girl of sixteen months. It began after a fall out of bed. From four to six quarts of urine were passed daily, having a specific gravity of 1,003. The child had had the disease about three years.

Dr. C. Herrman remarked that in 1 case of diabetes insipidus he had obtained good results from the use of suprarenal extract.

THE SYMPTOMATOLOGY, DIFFERENTIAL DIAGNOSIS AND COURSE OF BRONCHOPNEUMONIA IN CHILDREN.

Dr. Matthias Nicoll, Jr., read this paper. He said that bronchopneumonia was essentially a disease of the poor, and must be largely studied in institution practice. This paper was based on an analysis of 167 cases of socalled primary bronchopneumonia occurring in the New York Foundling Hospital in the past three years. It was sometimes said that about one-third of the cases of bronchopneumonia were primary, but this was too large a percentage, according to the experience in most institutions. About two-thirds of the cases of bronchopneumonia occurred between December and May. Of 147 cases in which the age was known, 70 per cent. were in children under two years of age. Anything which tended to lower the powers of resistance might act as a direct cause of the disease. It was most uncertain in its course and termination.

The onset was abrupt, and was often characterized by irritability or apathy, vomiting and a hot skin. The cry was apt to be short, terminating abruptly as if causing pain. The temperature would rise four or five degrees, and the respirations become forty or more a minute. A significant sign was the change in the pulse-respiration ratio, this being three to one, or, perhaps, even two to one. There was usually a difference in the intensity of the cry as heard on the two sides of the chest. Subcrepitant and fine râles should be carefully sought for, because, along with the symptoms already detailed, they are proof of pulmonary congestion. When there was much consolidation, one would hear over these areas bronchovesicular or bronchial breathing. It was not uncommon to note the physical signs of a bronchopneumonia only just before the occurrence of defervescence. The mild cases usually lasted a fortnight, but often the disease lasted one or two months. In the favorable cases, one would usually note a tendency, after the first two or three days, for the temperature to become less, but termination by crisis was exceptional. This mode of termination occurred only nine times in the author's 167 cases.

While the cough was often troublesome, it was by no means rare for the cough to be entirely absent. Suppression of the cough was seen in the fatal cases. There was apt to be more or less intestinal disturbance, and gaseous distention to such a degree as seriously to embarrass respiration. If, in a child under three years of age, sudden and grave illness developed, or, if in the course of some other disease, there was a sudden increase in the temperature and respiration, bronchopneumonia should always be thought of. The change in the pulse-respiration ratio was of much diagnostic importance. It was true, that during the height of the fever of measles there was a similar disturbance of the pulse-respiration ratio, but this was only temporary. The author did not believe it was possible to distinguish clinically, between disseminated bronchopneumonia and capillary bronchitis. The detection of the occurrence of bronchopneumonia in the course of a laryngeal diphtheria was sometimes difficult owing to the transmission of sounds from the trachea. When bronchopneumonia was associated with marked nervous phenomena at the onset, the disease might be confounded with meningitis. Rigidity of the neck might be present, and the apathetic expression reminded one of the mask-like face of meningitis.

THE TREATMENT OF BRONCHOPNEUMONIA IN CHILDREN.

Dr. William P. Northrup read this paper. He thought it was of advantage, in connection with the subject of treatment, to bear in mind that, in bronchopneumonia, the pulmonary apparatus was the seat of a pathological process that might well be likened to a pulmonary erysipelas or cellulitis. In the treatment of bronchopneumonia it was most important to secure the free admission of fresh air. He did not hesitate to let the temperature of the sick room go down to 65° or even 40° F., and it was a common experience for his nurses to be compelled, while on duty, to wear wraps and gloves, to keep themselves warm. He had no fear of a fever patient "catching cold"—indeed, no one "caught cold" from fresh air entering the nostrils or striking the oval of the face. This free admission of air was not only refreshing to the patient, but favored elimination. It was of the utmost importance that perfect tranquillity be secured for the pneumonia patient. At the outset of the treatment, the bowels should be freely opened with castor oil, with or without calomel.

The diet should be carefully regulated so that fermentation and consequent gaseous distention does not occur. Should this condition occur, it should be relieved by high saline irrigations of the colon. The indications of the thermometer should not be taken too seriously; it was far better to be guided by good judgment and the patient's appearance. An important part of the nurse's duty was to keep the feet warm and note the respirations. If the feet were cold and the pulse poor, a hot foot bath, given in bed, would prove an excellent stimulant to the heart. The use of heavy poultices was to be deprecated. He did not approve of steam tents in pneumonia, for they robbed the patient of oxygen and macerated him.

Dr. L. Emmett Holt opened the discussion. He said that perhaps in no other disease was the hygienic treatment so important as in pneumonia. While he would admit that a great many cases of bronchopneumonia could be successfully treated by the cold-air method so ardently advocated by Dr. Northrup, he thought it would be a mistake to let the impression go out that every case of bronchopneumonia could be appropriately treated in that manner. He was a firm believer in the efficacy of steam in many serious cases of infantile bronchopneumonia. Where there were dry, wheezing râles all over the chest and scanty secretion, and where the child was panting for breath, both counter-irritation and steam would give relief.

He considered it very unfortunate that so many of our statistics regarding pneumonia and other diseases were drawn from hospital rather than from private practice, for the deductions from such statistics gave the novitiate in medicine some very erroneous notions. In order to contribute his mite to the statistics derived from private sources, he had looked over the records of primary pneumonia cases seen in his private practice in the last three years. In this way, he had collected 119 cases, 92 of which had been seen in consultation, thus indicating that a fair proportion of the cases were severe. He agreed with Dr. Nicoll that lobar pneumonia was particularly common in private practice. In his series there were seventy lobar pneumonias, of which sixty-one recovered. As twenty-one of these patients were under two years old, it proved that one was not justified in considering all cases of pneumonia occurring in children under three years of age, as examples of bronchopneumonia. There were 48 cases of bronchopneumonia, of which 41 recovered. In this series, 21 were under a year old, and all of the fatalities occurred in the first year. Thirty-five of the 41 cases were so severe that they were seen in consultation.

Dr. Holt said that these figures should teach the lesson that there is in bronchopneumonia a strong tendency to recovery, from which it logically followed that one should be chary about too sweeping deductions, based on individual methods of treatment. He knew of nothing more detrimental to the pneumonia-patient than bad feeding; except, of course, the exclusion of fresh air. The deaths occurring early in children suffering from bronchopneumonia were generally the result of an overpowering intoxication or an overwhelming by the large area of lung involved. The later deaths, those occurring in the third or fourth week, were the result of exhaustion due to malnutrition. After the first week or ten days the case became one for careful feeding. Physicians often did not realize how much harm was done sick children by disturbing them too much.

Dr. Floyd M. Crandall said that if there was one thing that the medical profession needed to be taught at the present time, it was not to be too strenuous in the treatment of pneumonia. The tendency was to give children too much medicine and do too much for them. When the bronchial secretions were scanty, it might be necessary to prescribe some chlorid of ammonium, and if so, it should be given in water and not in syrup, but cough medicines were much more often prescribed than needed. The physician often forgot so to arrange the medicines and other therapeutic measures that they would disturb the child very little at night. Physicians who had chiefly observed pneumonia in hospitals were apt to be surprised when they saw in private practice the strong tendency to recovery.

THE DETERMINING FACTOR IN LOBAR AND BRONCHOPNEUMONIA.

Dr. Augustus Wadsworth described some experiments that he had been conducting upon animals. Animals were inoculated with pneumonia exudates of varying degrees of virulence. In most instances in which the animals were normal, the virulent exudates caused a bacteriemic type of infection without much lesion in the lung. When less virulent matter was used, no lesions appeared in the lung. Other animals were subsequently subjected to trauma, to cold, and to the injection of irritating substances. In these animals pulmonary lesions were more commonly met with, and were usually of the bronchopneumonic type; if, however, very virulent cultures were used, the bacteriemic type of infection, without lung lesion, was more apt to result. Lobar lesions developed chiefly in animals showing greater powers of resistance—indeed, it was only possible to produce a lobar pneumonia in the animal by a careful balancing of the virulence of the infection and the susceptibility of the animal. Animals were then immunized by injecting low-virulence and high-virulence micrococci. When the animal was protected he obtained a lobar type of lesion with the high-virulent micrococci. If the resistance was not sufficient to prevent the production of the bacteriemic type of infection, the lesions were generally of the bronchopneumonic type. The lobar pneumonia developing in a resistant and immunized animal was comparable with the lobar pneumonia developing in a robust adult. The gravity of a pneumonia really depended more upon the likelihood of a general infection than upon the extent of the lung lesion, for the latter was, after all, a conservative process.

Dr. S. A. Knopf said that from his experience with the fresh-air treatment of a chronic disease, like pulmonary tuberculosis, he felt disposed to warn against the too sudden employment of such treatment. Nothing had been said in the discussion concerning the use of dry cups. This was an old-fashioned mode of treatment, but withal an excellent one. He was strongly in favor of anticipating the occurrence of heart failure in pneumonia by giving digitalis from the onset of the disease.

Dr. Anthony Bassler said that as he had seen certain cases which were not ordinary bronchitis, and yet he hardly liked to classify as bronchopneumonia, he would urge the retention of the old term, capillary bronchitis. In his private practice, he had not observed such a large proportion of lobar pneumonias in young infants.

Dr. C. G. Kerley insisted that there was no such thing as a mild or trifling bronchitis in a young infant; it was always a dangerous infection in such a subject. Our object in the treatment of bronchopneumonia should be to increase the patient's powers of resistance. It was his practice to reduce the quantity of food taken to one-third what it had been before the onset of the pneumonia. He made it a point to secure good ventilation of the sick room, but he did not go to the extreme of reducing the room temperature to 40°F. He had observed 30 cases of pneumonia in infants that had been treated as out-patients, with only one death, and that in a child suffering from marasmus. The parents were not told that the babies had pneumonia, but were instructed to bring the little ones to the dispensary daily for observation. The results were certainly better than were obtained among the same people in their tenement homes. Steam inhalations were undoubtedly beneficial in some cases of bronchopneumonia, and the expression "steam tent" did not necessarily imply that the tent was closed up and the little sufferer so deprived of much-needed oxygen. Where there were spasm and respiratory distress these would be aggravated by exposure to cold air; on the other hand, these were just the cases that were promptly relieved and benefited by steam inhalations.

Dr. Walter Lester Carr also spoke of the benefit to be derived from steam inhalations in cases of infantile bronchitis and bronchopneumonia with respiratory spasm. Where the bronchopneumonia showed a tendency to spread, he favored counter irritation by means of a mixture of one part mustard and six or eight parts of flour. Where the secretions were very free, but not expectorated, some relief was afforded by elevating the foot of the bed.

Dr. Nicoll, in closing, said that a case of disseminated bronchitis involving the finer bronchi was, to all intents and purposes, a bronchopneumonia, and should be considered as such.

THE PHILADELPHIA PEDIATRIC SOCIETY.

Stated Meeting, Tuesday, January 12, 1904.

Dr. D. J. Milton Miller, Chairman.

ENORMOUS HYPERTROPHY OF THE HEART IN ENDOCARDITIS.

Dr. D. L. Edsall reported a case of endocarditis in a child of eleven years, in whom the cardiac disease had existed for eight years and had produced enormous hypertrophy. The interesting point in the case was the presence of signs of compression of the lung similar to those seen in pericardial effusion. The child presented extensive dullness over the lower portion of the left lung and along the spinal column on the right. There were also marked bronchial breathing and the other signs of consolidation. There was no temperature and no other indication of either pneumonia or pericardial effusion. The nature of the pulmonary signs could be demonstrated by throwing the patient well forward and to the right for a few minutes, when the compression was so far relieved that the dullness was replaced by very moderate impairment of resonance, and the breathing became broncho-vesicular.

CASE OF AORTIC ANEURISM OR OF CONGENITAL DEFORMITY?

Dr. Hamill showed a girl of eleven years with signs suggesting aneurism of the arch of the aorta. There was nothing suggestive in her family history or her previous history. Her only symptoms were:—dyspnea, cardiac palpitation and cardiac pain. She showed many of the stigmata of degeneration. There was nothing suggestive in the physical examination of the upper air passages. The ophthalmoscopic examination showed nothing having special bearing upon the intrathoracic condition. The right pupil was a little larger than the left.

The suggestive signs were:—moderate fullness of the superficial veins of the chest; some fullness in the region of the top of the sternum and under the inner third of the left clavicle, and more marked pulsation in the carotids and subclavians on the left side; some pushing forward of the upper part of the sternum with each systole; less fullness and some delay in the left radial pulse; marked pulsation in the suprasternal notch accompanied by distinct systolic thrill and diastolic shock; questionable tracheal tug; some displacement of the apex beat to the left; absence of pulsation in the abdominal aorta; an area of dullness at the top of the sternum and extending slightly to the right and left; the presence of a soft blowing systolic murmur, a whirring musical murmur beginning late in systole and extending into diastole and a diastolic murmur. The first two murmurs are best heard over the area of dullness, the last being best heard at the xiphoid cartilage and transmitted down to the sternum.

In commenting upon the case, Dr. Hamill said that, while the physical signs were very suggestive of aneurism, he was inclined to consider them as probably dependent upon some congenital lesion of the great vessels.

CYSTIC ECTOPIC KIDNEY.

Dr. Hamill showed also a boy, aged six years, with a mass in the right upper abdominal quadrant. The boy gave a history of having received an injury in this region three years previously by falling upon a curbstone. The pain immediately following the accident was very severe, almost sufficient to produce unconsciousness. Since that time, he had had suddenly recurring attacks of severe pain in this region, which were accompanied by high fever, sometimes by constipation and again by diarrhea. He had also passed a few bloody stools. The attacks of pain usually began when the child was playing, and came on with great suddenness. There were no urinary manifestations; on one occasion he was thought to have been jaundiced.

During his stay in the hospital the mass had fluctuated in size. The examinations of the urine were entirely negative. There was no increase in the amount of the urine at the time the mass decreased in size. He had had one or two stools containing blood. He had had no pain since his stay of three weeks in the hospital. His general health seemed good, although he was said to have become considerably emaciated in the past year. His blood examination showed a mild secondary anemia.

The mass, on palpation, occupied the position of a displaced and enlarged kidney. Its posterior aspect was kidney shaped. Anteriorly it seemed to be associated with the liver. On the one occasion on which it became very much reduced in size, the kidney shape was lost and there was a distinct nodule at the lower end of the mass. The diagnosis that was suggested as probable was a displaced kidney which became kinked under certain conditions and resulted in a cutting off of the ureter and consequent dilatation. The bloody stools were reported by an incompetent nurse and her statement could not be accepted as reliable.

Dr. A. A. Eshner said that the clinical history and the physical signs in the second case seemed to indicate that the condition was most probably one of cystic kidney. In favor of this view was the variation in the size of the tumor, its situation, and its lobulated character. As to the other case, the speaker felt that while aneurism was suggested by many of the signs present, it was improbable that this was actually present, particularly as the murmurs were so indistinct. The child presented many of the stigmata of degeneracy; and, while this did not necessarily indicate the existence of congenital anomalies, it was at least suggestive of such a possibility. The condition might be one of abnormal arrangement of the vessels, of embryological origin. The murmur high up in the back was strongly suggestive of some anomaly in the course of the vertebral artery.

Dr. Hamill, in reply, said that he thought that Dr. Eshner must be laboring under some misapprehension in regard to the murmurs. The circumstances in which the child was exhibited had made it somewhat difficult to distinguish heart-murmurs clearly; but these murmurs were quite easily discovered, and seemed to maintain about the same character and intensity.

Dr. J. H. McKee exhibited a case of hydrocephalus of remarkable degree that he had treated by tapping the ventricles, this procedure having been carried out merely for palliative purposes. The child's symptoms, however, afterwards improved to a rather striking extent; and this improvement has persisted.

Dr. J. H. Jopson asked whether in tapping the ventricle Dr. McKee had let the fluid flow until it stopped spontaneously, or had merely taken away what he thought to be a proper quantity and then discontinued the procedure.

Dr. McKee replied that the fluid had almost ceased to flow of itself when inhibition of the pulse was noted, and that the cannula was then removed.

Dr. A. P. Francine read a paper on Diastasis of the Recti Muscles in Rickets, which will be found in full on page 116, February, 1904, Archives of Pediatrics.

There was no discussion.

This paper was followed by the address of the retiring President.

Current Literature.

PATHOLOGY.

Michel, F.: Osteogenesis Imperfecta. (*Virchow's Archiv.*, Bd. clxxiii., p. 1.)

A full term, still-born child had abnormally short, plump, brittle extremities and a membranous cranium. Histological examination showed that there was marked diminution in both endochondrial and periosteal bone formation throughout the entire osseous system. The cartilage everywhere was of normal consistency. The bones consisted of a very thin shell of what was chiefly calcified bone spicules. This abnormal consistency led to intrauterine fractures of the unusually thin ribs, the diaphyses of the long bones and the inferior maxilla. At the point of fracture the periosteum was stimulated to proliferation, with the result that at these points the bones acquired a certain hardness.

There are only 12 other similar cases on record. The majority were female children, and only one reached the age of three months; three lived six weeks; five died soon after birth and two were still-born. Osteogenesis imperfecta is a clinically and anatomically well-defined fetal disease, the etiology of which is obscure.

Haan, J. de: Experimental Tuberculosis. (*Virchow's Archiv.*, Bd. clxxiv., p. 1.)

Working with pure cultures of tubercle bacilli obtained from the sputum of a tuberculous human subject, the author was able to produce tuberculous lesions (macroscopically and microscopically identified) in the Javanese goat, ox and horse when these animals were not in good condition. The healthy sheep and ox are resistant to infection with tuberculous material. These animals have no race-immunity to tuberculosis. The fact that the disease does not occur among the Java cattle is due as much to the open air life as to the infrequent occurrence of tuberculosis among the native population.

The ape is very susceptible to infection with human tuberculosis.

The use of food containing tubercle bacilli may lead to the appearance of tuberculosis of the lungs and the bronchial lymph nodes, either with tuberculosis of the mesenteric lymph nodes and no visible lesion in the intestines, or without any other localization of the tuberculous process. The lungs are the organs for which tuberculosis has a predilection.

Chavasse et Mahn: Lumbar Puncture in the Endocranial Complications of Otitis. (*La Presse Méd.*, November 25, 1903, p. 815.)

A summary of the article is given as follows:—

(1) Lumbar puncture is harmless when properly performed, and the examination of the cerebrospinal fluid—its color, bacteriology and cytology—is of tremendous help in the diagnosis of the above complications.

(2) Note should be made of the positive and negative results, and account taken of the period in the course of the affection at which the puncture is made. Certain general diseases affect the composition of the fluid.

(3) In the great majority of cases, a turbid liquid will reveal, after centrifuging, many bacteria, the cause of the meningitis. A clear fluid with many lymphocytes points to a tubercular meningitis—the Koch bacillus being positive proof.

(4) In extra and subdural inflammation, no change is noted in the fluid so long as the pia remains intact.

(5) In circumscribed meningitis, lumbar puncture has as yet been of no precise value.

(6) In cerebral abscess, lateral sinus thrombophlebitis and non-bacterial serous meningitis, the cerebrospinal fluid is clear, normal, often increased in quantity and under higher pressure.

(7) The liquid remains normal in cases of labyrinthine disease and pseudomeningitis.

(8) After traumatic lesions of the labyrinth or base of the cranium near the ear, blood-platelets are very frequently found in the cerebrospinal fluid.

(9) The examination of the fluid should never interfere with surgical procedure. It should be of aid in localizing the malady.

(10) In cases where the examination of the fluid points to a meningitis, surgical interference is indicated except where clinically the cases are despaired of.

(11) Lumbar puncture has been of great value in showing the possibility of cure in certain kinds of meningitis.

(12) The above proof of its value should lead to its very general application in all cases of endocranial affection.

Kuhn, A.: On Sequestrum Formation as a Result of Croupous Pneumonia in Childhood. (*Archiv. f. Kinderhk.*, Vol. xxxvii., p. 278.)

A rachitic boy five and one-half years old developed a croupous pneumonia involving first the right lower and later the left upper lobes. Death occurred after an illness of six weeks, from asthenia. At the autopsy the right lower lobe was found resolved and aerated. In the left upper lobe there was a cavity containing a sequestrum 3 by 1 cm. in diameter. It consisted of hepatized lung tissue and was not foul. The wall of the cavity was smooth and old, leading into a bronchus. The heart showed marked hypertrophy of the right ventricle.

This condition is very rare as a result of pneumonia in children, and its positive diagnosis is impossible except at autopsy.

Arnheim, G.: The Pathological Anatomy of Pertussis and the Occurrence of Pertussis Bacilli in the Organs. (*Virchow's Archiv.*, Vol. clxxiv., p. 530.)

Eight cases of children who died while suffering from an attack of pertussis were studied at autopsy. The poled bacilli described by Czaplewski were found in the sputum and respiratory tract. Conclusions are reached as follows: pertussis is an infectious catarrh of the mucosa of the respiratory tract, especially of the trachea. Many groups of the bacilli are found in the secretion of this tract and in its mucosa. A desquamative catarrh is common. If the lungs are involved the bacilli are found in moderate numbers in the bronchopneumonic areas. The attacks of coughing are to be looked upon as a healing process, since the sputum carries away many bacteria. In the course of the disease the sputum becomes viscid, probably due to the action of pyogenic organisms, which cause increased chemotaxis of leukocytes. After the colonies of bacteria are dislodged from the mucosa cure follows with restitutio ad integrum.

Sawyer, James E. H.: Chronic Interstitial Nephritis in Children. (*Birmingham Med. Rev.*, August, 1903, p. 511.)

From a careful study of the literature Sawyer draws the following conclusions as to the etiology of this rare condition:—

(1) Chronic interstitial nephritis in children is more frequent

in females than in males. (2) The changes in the kidneys are not a further stage of parenchymatous nephritis, but are the results of a primary inflammation of the interstitial tissue of the organs. (3) The disease is rarely caused by scarlet fever or any of the specific fevers. (4) The disease may be congenital in origin. (5) It may owe its origin to congenital and inherited peculiarities of constitution. (6) It may be due to an ascending nephritis, starting in the pelvis of the kidney. (7) Syphilis, either hereditary or acquired, may be the chief factor in the causation of this disease in childhood, and may play a greater part in the etiology of the disease in adults than is usually attributed to it.

MEDICINE.

Peters, R. A.: Two New and One Old Sign of Tetany. (*Russki Vratch,* Vol. ii., No. 43, p. 1,497.)

The author has carefully studied this peculiar affection and has contributed new points of view.

He once more proves that Trousseau's sign (the "Obstetric" hand) is due to compression of the vessels, not the nerves. Mere digital pressure on the brachial artery is not always sufficient to evoke the sign; better results are obtained by applying an Esmarch bandage near the axilla.

A very interesting sign of tetany is obtained by applying the anode of an ascending current to the sternum and the cathode to the lower cervical vertebræ; closure of the circuit produces sudden convulsive movements of the hands and arms, reminding one of the toy-clown operated by pulling a string.

A third phenomenon of tetany is increased secretion of cerebrospinal fluid. This sign is pronounced in direct ratio to the severity of the disease and its duration.

These three signs are in all probability of spinal origin, as shown by the tonic nature of the convulsions and by their appearance independent of the cerebrum. The "clown phenomenon" and the "obstetric hand" point to a pathologic process in the roots of the spinal nerves. Besides the nerves, other tissues are undoubtedly affected (bones, muscles, meninges of the cord).

Speaking of socalled "latent" tetany and its association with eclamptic attacks the author is convinced that the two conditions are independent of each other. Eclampsia is a cerebral tetany, a spinal manifestation; they may have similar or identical causative factors, but the nature of the two affections is not the same.

The rachitic theory of latent tetany is also discarded by the author, who considers rickets and latent tetany as two diseases, often co-existent in one person, but not otherwise connected.

Gerassimovitch, W. P.: Bloody Vomit in Peritonitis. (*Russki Vratch*, Vol. ii., No. 46, p. 1,622.)

Several cases are reported of black or bloody vomit in children suffering from peritonitis. While the same form of vomiting is met with in adults, early life seems to be a predisposing factor.

Dieulafoy thought bloody vomit of a toxic nature to be a symptom of appendicitis. This is disputed by the author, who regards the vomiting as a symptom of general septic and purulent peritonitis. When bloody vomiting occurs in appendicitis without peritonitis, it is due to sepsis.

The vomited blood has its origin in minute hemorrhages by diapedesis. Erosions may form, but they are secondary.

The factors underlying the minute hemorrhages are (1) toxic changes of the blood-vessels; (2) paralysis of the gastric vasomotor nerves; (3) stasis, and (4) increased blood-pressure.

Bloody vomit is an ominous sign, as noted by Charlot and confirmed by the author's cases.

Labbé, Raoul: A Case of Purulent Pleurisy in a Newborn. (*La Pédiatrie Pratique*, October 15, 1903, p. 133.)

A baby six weeks old with no family history of importance was brought to the hospital with a record of having had constipation and generalized convulsions for three days. No signs of bronchitis had been noted. On examination, there was absence of respiratory murmur and flatness at the left base. Exaggerated breathing over the right lung with a few subcrepitant râles. The general condition of the baby was very low, the convulsions occurring frequently. Calomel was given and tepid mustard tubs every three hours, but the condition became rapidly worse. Exploratory puncture showed a yellow purulent fluid; thoracentesis was performed immediately, with the withdrawal of 150 grams of purulent fluid. Improvement was temporary, and the child died in about five hours in a state of collapse. Examination of the fluid by smear and culture showed abundant staphylococci and streptococci. At autopsy the left pleura was found to contain 100 c.cm. of the purulent exudate. The left lung was tri-lobed and its surface covered with a purulent false membrane—almost the entire lung was hepatized. The right pleura was intact; the right lung was congested at its dependent portions. There was congestion of the pericardium, spleen and liver, the latter weighing 130 grams.

Barbillion: Septic Infection of Otic Origin in Nurslings. (*Revue Mens. des Maladies de l'Enfance*, November, 1903, p. 487.)

A careful study of this subject is made and the following conclusions are drawn:—

(1) The massing together of nurslings in a hospital is essentially favorable to the spreading of septic infection.

(2) Septic infection travels ordinarily from the nasopharynx to the middle ear and its appendages.

(3) This infection is of great frequence. In general, it occurs shortly after the placing of these children in a septic environment. Suppuration of the middle ear, and its adnexa, is the rule in the infants who die. Its absence is the exception.

(4) A large number of morbid conditions, considered and treated primarily as digestive disturbances, are nothing but septic infections of the oto-nasopharynx, entirely unsuspected during life, but clearly demonstrated at autopsy.

(5) This primary infection leads secondarily to dyspeptic and general symptoms, which latter may become rapidly fatal, or gradually abate and disappear with or without perforation of the tympanic membrane and otorrhea.

(6) The diagnosis of otic infection during life is very difficult, on account of the rarity of tympanic perforation and of local symptoms. Anorexia, profound apathy, and the failure of the ordinary therapeutic measures for digestive disturbance, should point to an infection of this character.

Muniagurria: Scoliosis Produced by Typhoid Fever. (*Arch. de Méd. des Enf.*, November, 1903, p. 677.)

A boy of eight years had an attack of typhoid fever. During convalescence a myositis of the left psoas muscle developed. The shortening of the leg caused by the painful refraction of the muscle produced a dorso-lumbar scoliosis. The psoitis was first cured by extension of the limb, and then gymnastics directed toward the correction of the vertebral curvature proved successful. The boy was completely cured.

Holkind, E.: Three Cases of Bronchial Asthma in Children. (*Archiv. f. Kinderhk.*, Vol. xxxvii., p. 442.)

The patients were boys of seven, eight and fourteen years, respectively. All were neurasthenic, and all were cases of nervous bronchial asthma of the reflex type. In one the disease was evidently hereditary, the mother being hysterical and her two sisters asthmatic. In another case predisposition may be assumed, as the grandfather and two aunts had asthma. The third case was the son of a tuberculous father. The eight-year-old boy suffered from urticaria after each attack of asthma. Emphysema was present in but 1 of the cases.

The prognosis is good, as a rule, but not invariably. The disease may last from childhood through adult life, being very difficult to cure. The cause must be treated first. Iodin, tonics and change of air are sometimes of value.

McCollom, John H., and Blake, John Bapst: General Peritonitis Complicating Scarlet Fever. (*Boston Medical and Surgical Journal*, December 10, 1903, p. 639.)

Streptococcus peritonitis as a complication of scarlatina is very rare. The authors report two such occurrences out of 8,000 cases. One case was that of a man thirty-one years old, in whom the attack was fatal; the other that of a boy five years old. The details of the latter case are as follows: The boy was brought to the hospital suffering from diphtheria; two days after entrance the skin flushed, and on the third day scarlet fever was obvious. Twenty-three days after entrance the boy vomited and complained of abdominal pain. The urine became slightly albuminous, and the tenderness and rigidity of the abdomen continued, as did the vomiting. Ten days later the umbilicus began to protrude, the area around being red, swollen and painful, while the abdomen was dull in the flanks.

Forty-three days after entrance the abdomen was tapped in the median line, and 21 ounces of pus withdrawn, a culture from which showed streptococcus pyogenes. On the following day the umbilicus ruptured, and fluid leaked from it for several days. On the fifty-first day a few drams of pus were aspirated from the left side of the chest. When the boy was taken from the hospital, against advice, there were still signs of fluid in the chest and abdomen. Four months later he was shown at a meeting of the Boston City Hospital Clinical Club, apparently well.

From a consideration of these cases the authors conclude in regard to treatment that, if the signs of peritoneal infection are slight, palliative measures, such as enemata, turpentin stupes and rectal feeding will suffice. If the pulse steadily rises, and pain, tenderness and spasm increase, operation is imperative. On account of the kidneys cocain should be substituted, whenever possible, for ether. The operation should consist of rapid celiotomy, thorough irrigation with hot salt solution and drainage. There should be energetic stimulation by caffein, strychnin and digitalis. The prognosis is always very grave.

Fabre, Paul: Clinical Study of Infantile Herpes. (*Rev. Mens. des. Mal. de l'Enf.*, December, 1903, p. 529.)

The following summary is made:—

(1) Herpes is less rare in children than is generally thought. (2) It is more common in boys than in girls, in the proportion of 5 to 4. The writer cites 31 cases in male and 20 in female children. (3) Pain often exists. It has been observed in 25 cases out of 63. It is burning, shooting or tingling, at times severe enough to cause insomnia and convulsions which disappear coincidently with the appearance of the eruption. (4) Fever is noted more often than in adults. Initial digestive symptoms are also fairly frequent. (5) The course is rapid, rarely lasting more than a fortnight, and generally no longer than a week. (6) The indications for treatment are the same as in adults. Mild catharsis allays irritation and prevents rupture and infection of the vesicles.

Mercier, Oscar: Empyema Opening Spontaneously—Externally and into the Stomach; Alimentary Fistula. (*L'Union Méd. du Can.*, December, 1903, p. 702.)

A child of seven years was attacked with high fever, vomiting, headache and continued dry cough, which symptoms lasted for two months, gradually diminishing in intensity. At the end of this time violent pains developed in the right side without any local inflammatory manifestations; they continued for a month, when suddenly an opening appeared spontaneously in the right side of the chest, allowing the escape of a large quantity of pus, at the same time there was profuse expectoration of purulent material. Six months after the appearance of the fistula, food was detected in the discharge from it and examination showed the presence of gastric juice. It is evident that there was pleurisy at the onset, followed by empyema which opened itself spontaneously at the highest point of the pleural cavity, and later formed a fistulous tract into the stomach, also for the escape of pus. The treatment consisted of enlargement of the external opening with resection of the rib and drainage. The day following, all the food was found to have passed through one of the drainage tubes, but this gradually ceased, and the fistulæ closed, the external one being kept open until the one into the stomach had first closed. The child gained in flesh and strength. It is not easy to explain the fistula of the stomach. Possibly the pus, flowing with difficulty through the external opening, made another path for itself along the esophagus to the cardiac end of the stomach, there causing a destructive inflammation, and opening into the stomach; hence, the escape of gastric contents. The case is very extraordinary; only one other similar one has been recorded.

Sawyer, James E. H.: Chronic Interstitial Nephritis in Children. (*Birmingham Med. Rev.*, September, 1903, p. 549.)

In describing the symptoms of the disease, Sawyer groups them as follows:—

I. *Early symptoms* which are rarely definite:—(*a*) Cerebral; such as headaches, vertigo or convulsions, each of which may or may not be uremic in origin; cerebral hemorrhage may be the first symptom. (*b*) Nervous; such as changes in disposition, restless sleep or night terrors. (*c*) Digestive; such as anorexia, a capricious appetite, or vomiting, which is fairly common and more important. Excessive thirst is often present, and is associated with polyuria. (*d*) Uremic; such as might characterize grave renal inadequacy in adults. (*e*) Urinary; such as polyuria and incontinence. (*f*) Gradual loss of weight and inability to grow.

II. *Facial Appearance.*—There is often an old and wizened expression: the face is usually pale, but the skin is nearly always dry and rough; the complexion may be sallow or "dirty."

III. *Edema* is rare and marks only the terminal stage; the reason may be that compensatory hypertrophy so much more readily takes place and failure of compensation is not so likely to occur.

IV. *Changes in the Urine.*—In consequenc of the constant polyuria there is usually nocturnal enuresis. Albumin is usually present in very small quantity, and may be absent for very long periods. On account of the polyuria without albumin, and with excessive thirst, "diabetes insipidus" has been diagnosticated in several instances. Casts may or may not be found.

V. *Circulatory System.*—High arterial tension is a marked and constant condition; it can easily be made out at the radial pulse. Other signs of increased tension are second aortic accentuation, hemorrhage from the nose, and cardiac hypertrophy. A systolic murmur may be heard at the apex, transmitted to the left; it is rarely caused by endocarditis, being usually due to dilatation of the mitral orifice.

VI. *Digestive System.*—Anorexia, capricious or a ravenous appetite may be present, the last usually associated with excessive thirst. Vomiting increases in frequency with the progress of the disease.

VII. *Respiratory symptoms* are rare until uremic dyspnea comes on.

VIII. and IX. *Nervous and Uremic Symptoms.*—Dull frontal headache, sleeplessness, convulsions, vomiting and later drowsiness and coma with convergent or divergent strabismus may suggest tuberculous meningitis. Attacks of tetany are occasionally observed, as is uremic amaurosis.

SURGERY.

Nobécourt, P., and Babouneix, L.: A Case of Multiple Osteoperiostitis. (*La Pédiat. Prat.*, December 1, 1903, p. 169.)

The patient, eight years old, came under observation, suffering with osteoperiostitic lesions of the right leg, left side of the jaw, left ulna, left thigh, and a soft tumor of the right arm. Two points are to be noted in the family history: the father developed anthrax of the neck, and one child had shown signs of pulmonary tuberculosis. A few days after the father was cured of the anthrax, a furuncle appeared on the left thigh of the little patient. This appeared to yield easily to treatment, when suddenly the right tibio tarsal joint began to swell, and in a few hours pneumonia set in with general septic symptoms. During the course of the pneumonia the ankle joint continued to swell, phlebitis developed in the same leg, and in mild form in the other leg. Periostitis of the right leg, the jaw and the left ulna followed rapidly, and finally the soft tumor of the right arm. Heroic syphilitic treatment had no effect. Hereditary syphilis, actinomycosis, typhoidal and tubercular osteoperiostitis, were easily excluded. The examination of the pus taken from the fluctuating tumor of the arm gave pure cultures of the golden staphylococcus, on gelatin and in bouillon. Consecutive to the malignant pustule developing in the father, the furuncle on the child was, in all probability, due to a virulent staphylococcus, which quickly invaded the economy, causing the many local and general symptoms.

Steinhardt, I.: Sarcoma of the Kidney in Childhood. (*Archiv. f. Kinderhk.*, Vol. xxxviii., p. 30.)

A boy three and a half years old had been well until his abdomen began to grow large, a tumor became palpable in the left hypochondrium, and he complained of being tired and unable to walk. Operation was refused, and death occurred ten months after the symptoms first appeared. For six weeks before death the tumor grew rapidly, the abdomen measuring 83 cm. in circumference. Edema of the lower extremities was marked. There was very little pain at any time. At the autopsy the growth was found to weigh thirteen pounds. No kidney substance remained. Metastases were present in the liver and lung. The right kidney was unaffected. Microscopically, the tumor proved to be a round and spindle cell sarcoma.

Menard, Victor: Double Coxalgia. (*La Tuber. Infant.*, December 15, 1903, p. 223.)

From this careful study the following conclusions are drawn:—(1) Double coxalgia is an exceptionally grave condition for the reason that (*a*) the organism is constantly threatened by the abundant resorption of bacterial toxins, and (*b*) the destruction of both coxo-femoral joints causes great difficulty in walking.

(2) The large percentage mortality confirms the first statement, though it is noted that generalized tuberculosis occurs far

less frequently than in the unilateral variety. Cerebral tuberculosis with the complication of one or more involved joints has a much greater fatality. In double coxalgia one-half of the cases survive.

(3) After cure, however, the general condition is lamentable, being that of a chronic deformity. Walking is almost impossible without the aid of cane or crutches, and the motion is made from the double pseudarthrosis, in addition to that coming from the knee-joint and instep.

Broca: Total Prolapse of the Rectum with Hydrocele in an Infant of Twelve Months—Recto-Coccypexia—Cure. (*La Presse Med.*, January 13, 1904, p. 31.)

The prolapse was the result of successive attacks of enteritis followed by constipation. The interesting point in the observation is that at the anterior superior portion of the tumor there was a soft projection, reducible, and giving gurgling râles on pressure. When the child cried or any effort was made the tumor increased in size. The diagnosis hydrocele was made, although so rare a complication in infancy that it has been denied. Rectococcypexia was performed with what appears after some months to be a permanent cure.

Perrin, Maurice: A Case of Anemia in an Infant. (*Annales de Med. et Chir. Infant.*, December 15, 1903, p. 829.)

This refers to a male infant of three years, bottle-fed since the fifth month, and subject since its infancy to various gastrointestinal troubles. The symptoms now manifest were those of a very marked case of chlorosis. No organic abnormality could be found. The blood count showed:—1,444,600 red cells; 9,300 white cells; 37 per cent. lymphocytes; 63 per cent. polynuclear, including large mononuclear and transitional; 1 per cent. eosinophiles; poikilocytosis.

Life in the open air, salt baths, rest and small doses of acetate of soda were prescribed. In a month, though there was no change in the appearance of the child, the blood count gave the following increase:—2,050,650 red cells; 17,050 leukocytes. Six drops of the tincture of iron were then given, with continuous stay in the open air. The child improved markedly and in the course of time was completely cured. The early digestive troubles seem to have been a causative factor in this profound anemia.

HYGIENE AND THERAPEUTICS.

Parkes, Louis C.: Summer Diarrheal Mortality in London. (*The Practitioner*, December, 1903, p. 855.)

After a study of the mortality in London during the last decennium from diarrhea, cholera and enteritis, Parkes concludes that, although the mean temperature of the summer months appears to exert an influence upon the mortality, there are other factors at present unknown. As to infectivity, he does not think that facts warrant the assumption of any high degree of infectiousness; since, if it were true the late autumn prevalence would be greatest and most prolonged in those years in which the summer prevalence has been highest; this, however, is not the case.

The substance that sets up summer diarrhea is generally believed to be introduced into the body by means of the food. Inasmuch as milk forms the principal food during infancy and early childhood, it is to the production and proper care of good clean milk that effort must be directed.

The harmful substance present in the milk, whether bacteria or their toxins, or a ferment, is largely dependent upon the air-temperature and other factors for its subsequent capacity to set up gastrointestinal changes when introduced into the alimentary tract. In the absence of sufficiently high air temperature the poison, though present in the milk, appears to be inoperative. Whether the milk already contains this poison when delivered, or acquires it after reaching the homes of the poor, is a question. Alternating warm and cold summer seasons demonstrate on a large scale that diarrhea mortality is largely a matter of temperature; and scientific reasoning leads us to conclude that a process so largely dependent upon temperature must have relation with some organized ferment or bacterium whose habitat is the food introduced.

The most hopeful methods, therefore, of counteracting the diarrheal poison would appear to be the sanitary control and supervision of all milk-supplies, and the education of the mothers of the children to an appreciation of the necessity for domestic cleanliness and for the careful and cleanly preparation of the children's food.

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Original Communications.

CHRONIC DIFFUSE NEPHRITIS IN A FOUR-YEAR-OLD BOY WITH A RUDIMENTARY KIDNEY.*

BY A. C. COTTON, M.D.,
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RECORDED CASES.—The rarity of solitary kidney is evident from the limited number of cases found on autopsy. Holt mentions but 1 case of single kidney in a thousand consecutive autopsies, in which twenty renal malformations were found. Ziegler says: "Congenital atrophy of one kidney is more common than entire absence. In well marked cases the atrophied kidney appears as a thin plate of fibrous tissue 2 to 5 cm. in length and 1½ to 3 cm. broad, with few or no traces of tubules or glomeruli, and is supplied by renal vessels normal in position but abnormally small."

G. B. Fowler states that in 11,978 autopsies made at the four largest London hospitals only three instances of marked atrophy were observed and that in 1894 not more than 70 or 80 cases had been reported. From an analysis of a large number of autopsies Morris concludes that single kidney is found only once in 2,400 bodies. Ballowitz in Virchow's Archives August 5, 1895, reports as a result of his researches 213 cases of absence of kidney.

ETIOLOGY.—As to the etiology of this interesting condition Ziegler states: "The causes which determine the non-development of one of the kidneys are unknown. We can only say that for some reason the outgrowth from the primitive ureter out of which the kidney is fashioned has been hindered or altogether suppressed. In some cases, however, traces of inflammation, in the form of cellular infiltration and fibrous hyperplasia, are discovered in the rudimentary organ. We are thus led to infer that intrauterine inflammation of the kidney is possible and may lead to arrest of its development."

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* Read at the meeting of the American Pediatric Society, Washington, D. C., May 12, 13 and 14, 1903.

The American Text-Book of Pathology suggests that renal hypoplasia may be due to faulty development, to congenital smallness of renal artery, to intrauterine inflammatory changes or to congenital stricture of the ureter. Although it has been stated that we have twice as much renal parenchyma as is necessary to carry on elimination, the statement may well be questioned from the fact that reported cases of hypoplasia of a kidney show compensatory hypertrophy of its fellow. Our autopsy shows no exception to this rule, the single kidney showing marked enlargement.

It is not strange that half the cases of absence of one kidney show a tendency to disease in the remaining organ. That the gravity of nephritis, either acute or chronic, should be manifold in these patients is self evident.

The following report embodies the history of a case of a boy of four years who had a rudimentary kidney.

HISTORY OF CASE.—*Family History.*—Father living and well, has four brothers and one sister all healthy. Mother living and well, has three brothers and four sisters, all healthy. Patient has three sisters, two healthy, one with infantile cerebral paralysis. One brother died of cholera infantum and one sister died ten days after birth.

Personal History.—Was a normal baby. First severe illness was in October, 1900, when he had an attack of bronchopneumonia, lasting twelve weeks. Since then has never been strong, catching cold readily. During these colds the mother noticed the urine decreased in quantity, was often passed involuntarily and was of an ammoniacal odor. In January, of 1902, edema of ankles and lower lids first appeared, disappearing and recurring at varying intervals under treatment. The child had measles in April, 1902, after which there was first observed the distention of the abdomen which still persists.

Physical Examination.—Child is fairly nourished. Eyelids are closed by edema. Abdomen is distended and fluctuating. Ankles edematous. All other points negative. Slight cough without physical signs.

Urine.—Examination of twenty-four hours' specimen of urine showed the total amount to be 480 cc.; specific gravity, 1,012; urea, 1.6 per cent.; urea, total, 7.68 gm.; total solids, 12.8 gm.; albumin present; hyaline and granular casts present.

Treatment and Record.—The patient was put to bed, placed on liquid diet and freely supplied with water and lemonade. Morning and evening he was given hot baths, followed by thirty minute hot packs which usually caused abundant diaphoresis. Citrate of potash was administered in small doses and later normal salt enemata were employed for diuretic effect.

This treatment, varied to suit the symptoms, was continued until the middle of October. Under it the patient would improve for a time, the edema and ascites would almost disappear and he was allowed to sit up and even walk about the ward. Then, suddenly, edema would reappear, the pulse and respiration would become accelerated with a slight rise of temperature. During this period the patient urinated from eight to twelve or more times each day, always in small amounts. The total amount varied from 300 to 900 cc. for twenty-four hours and the specific gravity from 1,007 to 1,013. Albumin was always present in considerable amount; urea percentage was low and the total urea was small.

The temperature ranged from 98° to 100° F., occasionally reaching 100.5° or even 101°. The pulse rate varied from 96 to 150, usually ranging between 110 and 130. The pulse was often weak and sometimes irregular.

During the latter part of August an eczematous rash appeared on the head and face, to a lesser degree upon the body and limbs and persisted for several weeks. On September 15th the patient had improved so much that he was given light diet in place of the liquids. His medicine consisted of carbonate of ammonia in 2 grain doses; diuretin in 5 grain doses four times a day, and magnesia sulphate in 2 dram doses each morning.

From October 10th to 20th the patient was troubled with vomiting and pulse was often irregular and weak. He was again put on liquid diet and given diuretin in 5 grain doses, with strychnia, $^1/_{120}$ gr., four times daily. On October 22d calomel, in doses of $^1/_{10}$ grain every two hours, was ordered, and magnesia citrate, 2 ounces, given every morning. The result of the treatment was quite a severe salivation which began on October 25th, with a rising temperature, which reached 102°F., and gradually subsided by the 29th. The pulse ranged from 120 to 160, was weak and often irregular. The teeth were slightly loosened, tongue and lips much swollen; face and eyelids markedly edematous. The submaxillary and parotid glands were enlarged and tender; the breath was foul and lips excoriated.

About December 15th the patient developed some impetigo contagiosa which proved unusually obstinate. The general symptoms again improved and he was given a soft diet. Sweats were ordered once instead of twice daily. Until February, 1903, nothing occurred; the patient was better and worse at intervals, with a general downward tendency.

On February 10th a morning specimen of urine showed a very large amount of albumin, many hyaline and granular, and a few waxy casts. The temperature began to show a subnormal tendency, frequently as low as 97° F., by rectum, with a diminution in the amount of the urine. Urination was frequently involuntary so that the total amount could not be accurately determined. February 14th, while the ward was being fumigated, the patient was transferred to a room on the sixth floor of the hospital in which, during the extremely cold weather that followed, a proper temperature could not be maintained. The sweats were necessarily discontinued and the child grew rapidly worse. On the 18th of February he urinated only three times, a total of 180 cc. The urine was loaded with albumin. The specific gravity was 1,010, with a few hyaline and many granular and fatty casts. The following day he passed urine twice, a total of 112 cc., and on the 20th there was almost complete anuria. During these three days the patient was much prostrated with tendency to semicoma. Physical examination showed considerable fluid in the abdomen and lower part of the thorax. Auscultation revealed large numbers of moist râles throughout the lungs. Respiration was rapid (40 to 60 per minute), labored and apparently painful. The breath was heavy with a urinous odor. The temperature was subnormal and pulse weak and irregular, ranging from 100 to 156. Muscular twitchings and tremor began on the 18th, but no general convulsion occurred. On the 20th the patient was returned to the children's ward and given a hot bath with no apparent effect. The pulse became extremely rapid; the respiration shallow and the patient died at 2:30 P.M., two and a half hours after the bath.

During this patient's nine months residence in the hospital his urine was examined 100 times; nearly forty of these examinations being twenty-four hour specimens in which the total amount, specific gravity, percentage of urea, total urea, total solids and albumin, were carefully estimated. The table of findings is reduced to general averages as follows:—

	Total amount of Urine.	Specific Gravity.	Urea, per cent.	Urea total.	Total solids.
Average	623	1,010.8	.759	4.87	14.29
Highest	1,200	1,018	1.6	18.00	32.48
Lowest	300	1,006	.5	1.80	7.00

AUTOPSY RECORD BY PETER BASSOE, M.D.

Necropsy of Charles Byron Clark, age four years, date of death, February 2, 1903. Date of autopsy, February 2, 1903; clinical diagnosis, chronic nephritis.

External Examination.—Child well nourished; skin pale; slight edema of legs and chest; rigor mortis slight; small abrasions on right index finger and thumb; length of body one meter.

Internal Examination.—Subcutaneous fat 1 cm. thick; peritoneal cavity contains one liter of clear serous fluid; peritoneum smooth and presents no abnormal adhesions; liver extends 3 cm. below costal arch in right mammary line. There is a large Meckel's diverticulum.

Thorax.—Each pleural cavity contains 250 cc. of straw colored fluid. On the right side are a few frail bands of adhesions uniting the parietal pleura with that covering the lung. The left side is free from adhesions. The pericardium contains 2 ounces of clear fluid. The thymus gland:—In its position is a thick layer of fat in the centre of which is a firm tissue. The thyroid gland:—Size proportionate to age. Glistening, pale grayish red on section. Larynx:—Mucous membrane smooth and pale. Trachea:—Mucous membrane smooth and pale; trachea-bronchial lymph nodes a little enlarged and pale red in color.

Lungs.—Left, weight 120 gms.; bluish gray and smooth externally; floats in water. Upper lobe crepitates freely; on section reddish, but contains very little blood; tissue tough, permeated by heavy bands of fibrous tissue. Lower lobe a little darker on cut surface, otherwise the same in appearance as upper. Right, weight 130 gms.; floats on water; fissure between upper and middle lobes partly obliterated. Upper and lower lobes very firm and crepitate very feebly. Middle lobe crepitates freely. On section the right resembles the left lung closely, except that in the lower lobe a little mucus can be expressed from the smaller bronchi.

Heart.—Weight 130 gms. Contains small amount of fluid blood. Tricuspid opening admits three fingers and mitral opening 2. All the valves are smooth. Left ventricle is 6 cm. long; ventricular wall 1 cm. thick. Right ventricle is 5 cm. long; wall is 2 mm. thick. Circumference of aortic opening is 44 mm.; of pulmonary opening 45 mm. Foramen ovale is closed. Myocardium is pale.

Mouth and pharynx normal on inspection, esophagus smooth.

Abdomen.—Spleen, weight 50 gms.; externally light reddish in color; cuts with increased resistance; trabeculæ prominent on section.

Stomach.—Size proportionate to age, contains some sour smelling milk curds; mucous membrane smooth and of normal appearance.

Small Intestine.—Lining is smooth throughout. 80 cm. from ileocecal valve is a Meckel's diverticulum 6 cm. in length and as thick as the index finger; no constriction at base; at free end are two shallow pouches containing a small amount of mucus. Appendix:—9 cm. in length, normal in appearance.

Large Intestine.—Solitary follicles prominent, especially in upper part; mucous membrane smooth throughout.

Pancreas.—Weight 30 gms.; cut surface pale; markings are distinct.

Liver.—Weight 550 gms.; external surface smooth, pale; cuts with slightly increased resistance; cut surface pale; small amount blood; lobular markings very distinct. Gall bladder contains thick greenish bile; walls thicker than normal.

Adrenals show no changes; both of usual size.

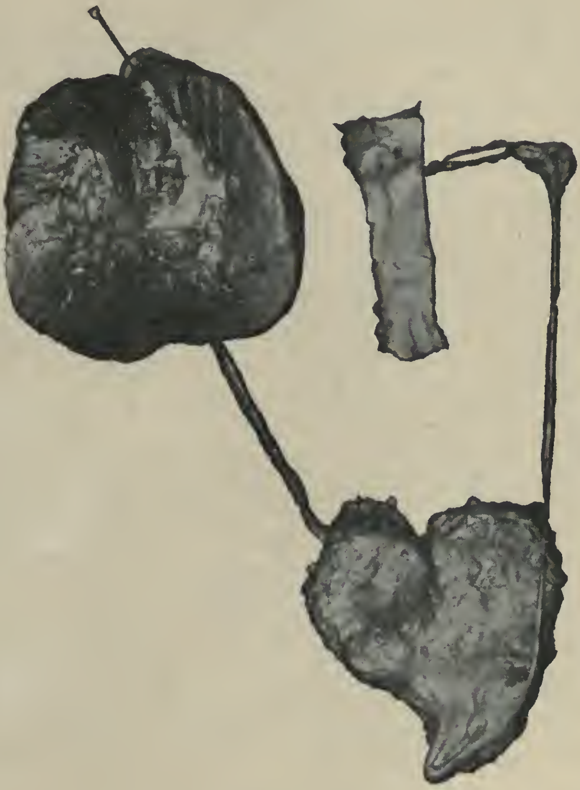
Right Kidney.—Weight 65 gms.; length 7 cm., width 4 cm., thickness 3.5 cm. The perirenal fat is considerable in amount. The capsule strips easily but leaves a very irregular surface with prominent stellate veins and many minute depressions and elevations. Cut surface is a mottled light grey. Cortex is pale, the distinction between cortex and medulla very slight. Cortical markings are very distinct. Mucous membrane of the pelvis is smooth.

Left Kidney is rudimentary, and consists of a small triangular whitish body with base upward. It measures 1 cm. in width and 1½ cm. in length. (See cut.) From this body an artery and a vein can be traced to the aorta and ascending vena cava respectively.

Right ureter normal in size and position. Left ureter, length 13 cm.; inserted into bladder in normal position; terminates above in the rudimentary left kidney described. The ureter possesses no demonstrable lumen.

Bladder, prostate, testicles and seminal vesicles normal. The epiphyseal cartilage at the lower end of the femur is 1½ mm. thick; line of ossification perfectly regular.

Anatomical Diagnosis.—(1) Extreme hypoplasia of left kidney. (2) Chronic diffuse nephritis (right kidney). (3) Hydroperitoneum. (4) Hydrothorax. (5) Hydropericardium. (6) Edema of legs and thoracic wall. (7) Hypertrophy of left ventricle. (8) Slight bronchitis. (9) Fatty liver. (10) Persistent Meckel's diverticulum. (11) Chronic interstitial pneumonia. (12) Hyperplasia of solitary follicles of ascending colon. (13) Localized fibrous pleuritis.



RUDIMENTARY LEFT KIDNEY.

Histologic Findings.—Only those concerning the kidneys will be given.

Right Kidney.—A great many of the tubules are dilated and contain hyaline masses. Other tubules contain leukocytes and epithelial debris. In the cortex and more so in the pyramids are found accumulations of round cells many of which are polymorphonuclear leukocytes. In the cortex are hyaline fibrous glomeruli. The condition is one of acute inflammation engrafted on a chronic diffuse nephritis.

Left Kidney.—The rudimentary left kidney was cut in serial sections, made horizontally, if we imagine the kidney in its position in the erect body. Each group of ten sections was placed in a separate numbered bottle and two or three sections of each stained by hematoxylon and eosin. The numbers used in the following description apply to these fifty-five groups, each roughly representing $^1/_{55}$ of the length of the kidney.

Nos. 1 to 4.—Sections are made up of a dense fibrous tissue with scant elongated nuclei, and considerable evidence of hyaline degeneration. In No. 4 is a straight row of rounded nuclei which suggests a tubular structure which becomes plain in No. 5. In No. 6 and No. 7 the hyaline degeneration becomes more pronounced. In No. 8 we see a cross section of a tubule the diameter of which is a little more than half of that of a normal glomerulus. It is lined by a single layer of low epithelium and contains homogeneous material which takes a pink stain, and may be said to constitute a hyaline cast. In No. 9 two structures are seen which appear to be imperfect glomeruli. In No. 10 and 11 a couple of additional tubules are seen in longitudinal section.

Beginning with No. 7 a rather large space has been noticed in the interior of all sections. In No. 12 it is plainly seen to be lined by a single layer of flat epithelium. It is narrow but extends over more than the central half of the section. The latter measures 10x2 mm. This space contains a homogeneous faintly stained material.

In the succeeding sections several new tubules are encountered some of them lined by a tall cylindrical epithelium. In No. 15 several such tubules of the convoluted type are seen in longitudinal section, but there are no glomeruli. In No. 17 is a glomerulus-like structure which is partly calcified. Near it are several fairly well-formed tubules of convoluted type. From No. 25 downward the tubular structures diminish in number and the central space becomes smaller and indistinct. The sections mainly consist of hyaline fibrous tissue, with a few tubules surrounded by a more cellular connective tissue and a number of thickened blood-vessels.

In No. 32 the tubules again become more numerous. In No. 35 is a small collection of mononuclear round cells around a group of tubules. In No. 48 the interior cavity and its epithelial lining become plainer and persist to the last section (55). In all sections the blood-vessels are quite numerous, except in the hyaline interior portion, and their walls are thickened. The cavity mentioned as occupying the interior of most of the sections may represent the pelvis or possibly merely a cyst. At no point were tubules seen to empty into it.

Experimental Examination of Mesenteric Nodes, Tonsils and Adenoids.—Allan MacFadyen and Alfred MacConkey (*Brit. Med. Jour.*, July 18, 1903), of the Jenner Institute, report the results obtained in examining the mesenteric nodes of twenty-eight children, nearly all of whom were under five years of age. The necropsy diagnoses were that eight had died of tuberculosis in some form, while the other twenty had died of various nontuberculous diseases. In each instance the nodes were preserved and disintegrated, in a manner described, and injections of the pulpy mass obtained were made peritoneally and subcutaneously into guinea-pigs. At the end of six weeks the animals were killed and examined. The inoculation experiments showed virulent tubercle bacilli present in the mesenteric nodes of ten of the children, only five of which were among the eight diagnosed at the necropsy as having tuberculous disease. The other five were among those believed not to have tuberculous disease. From this the authors conclude that virulent tubercle bacilli are present in the mesenteric glands of apparently nontuberculous children much more frequently than is commonly supposed—with their series in 25 per cent. of the cases. In the ten instances in which inoculation experiments showed the tubercle germs present, nine were examined microscopically, by sectioning the nodes, seven being negative. In 34 cases of tonsils, and 44 of adenoids the tissue removed at operation was tested experimentally by inoculating guinea-pigs; as with the mesenteric nodes, and in every instance with a negative result. The examinations microscopically, were also negative in every case. Hence, they conclude that diseased tonsils and adenoids as a portal of entry of tubercle bacilli have been exaggerated.—*American Medicine.*

THE ETIOLOGY OF RACHITIS.*

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In the following paper I wish to summarize briefly some experimental work which has been carried out to determine the cause of rickets, and to refer to some collective observations made by me on three small groups of infants from hospitals and tenements in New York, and finally to discuss the conclusions that may be drawn from these.

Although the disease has been recognized and studied for 250 years we are still very much in the dark as to its etiology. It was first described by Whistler in 1645 and was first called to general attention by Glisson's description of the disease in 1650. In the nineteenth century a more careful study of the disease was made with very extensive experimental work on animals.

In considering the etiology of rachitis we must agree that it is not a disease of the bones alone, but a general disease affecting the bones, ligaments, muscles, nervous system and mucous membranes and that the earliest symptoms of the disease, the sweating of the forehead and the restlessness, as indicated by a bald spot on the back of the head, are often unaccompanied by evident bone lesions. Although rachitis is said to occur between the sixth month and second year it is my experience that it is often fairly developed before the sixth month. That is, before that time the signs of craniotabes, the bald spot on the back of the head, the sweating of the forehead, and the rosary may be observed.

The theory of Parrot that rachitis is always of syphilitic origin is not advocated at present. A deficient supply of oxygen seems to be an important cause of rickets or, as we may say, climate is an important etiological factor. Rickets being essentially a disease of temperate and cold climates and almost unknown in hot climates, where people do not shut themselves up in close rooms, naturally those who suffer most in our temperate climates are those who come from hot climates, as the negroes and Italians. There is no doubt but that rickets is much more common in this country in Italians and negroes than in foreigners from northern climates, and our worst cases of rickets are seen in these people and especially in the negroes. The frequency of rachitis in certain temperate and cold climates is shown in the following observations:—

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* Read at the meeting of the American Pediatric Society, Washington, D. C., May 12, 13 and 14, 1903.

In Russia Ionkowsky states that 95 per cent. of the infants show slight lesions of rickets, while 35 per cent. show severe lesions. In Norway Johannessen considers that 32 per cent. of the children of his clinic have rickets and that the cases are seen most frequently in April to June, and least frequently in November and December. In Boston, Morse found that 80 per cent. of the infants at his dispensary class showed rickets. In Greece, Algiers, Peru, Mexico, and India and other countries with warm climates this disease is said to be seldom or never seen.

Rickets is, moreover, a disease of the cities and is much less frequent where people live less closely. Indeed, it has been suggested that rickets is a carbonic acid poisoning, but this theory has lacked support. That cold climate and the accompanying bad air of closed and close rooms is alone a sufficient cause of rickets I do not believe, but undoubtedly unsuitable food will produce rickets more rapidly when the child receives an insufficient supply of oxygen. It has thus been stated by several observers (Kassowitz, Wallach in Munich, Mey in Riga and Bystrow in St. Petersburg) that rickets occurs more frequently in winter than summer. Although race and climate may predispose to rachitis the active cause seems to exist in the diet.

The determination of the exact cause of rickets would seem to be rendered more simple by the fact that this disease may be produced in most of the lower animals, but in examining such series of experiments we find few consistent or conclusive results. When it was known that the bone lesions of rickets showed a deficiency of lime salts the theory was at once advanced that the deficiency of the salts in the food was the real active cause of the disease. It was indeed found by Chossat that by withholding lime salts from the food a softening of the bones resulted but a typical rachitic condition was not produced. Moreover, cow's milk contains more lime salts than mother's milk and again rickets is very common in places where there is much lime in the water. Another modification of this theory is, that the trouble is in the failure of the system to absorb the lime salts (Henoch and Baginsky), but observations on the elimination of lime salts in the urine of the rachitic and normal subjects showed no difference. It has been further held by Pommer that, although sufficient lime may be fed and absorbed, it may not be deposited in the neoplastic substance on account of diminished alkalinity of the blood, but it has been shown by Stoeltzner that the alkalinity of the blood is not diminished in rickets.

Again the lesions of rickets have been attributed to the presence of lactic acid in the system or, as is held by Monti, an excess of lactic acid in the stomach with a lessened amount of hydrochloric acid. This lactic acid theory may appeal to us because of the fact that many of the foods which seem to produce a severe type of rickets contain starch which may produce lactic acid in the stomach and, also, on account of the large content of lactic acid and lactic acid bacteria in some market milk. Extensive experiments on animals by many observers, consisting in the injection of lactic acid have failed almost always to produce rickets. Spellman injected a rabbit for a month and a half with 10 cc. of a 1-200 solution of lactic acid without producing any bone lesions. On the other hand rickets occurs in animals on a diet which does not lead to the development of lactic acid. Guerin fed young animals on meat instead of mother's milk and they developed rachitis. In the London Zoological Gardens more than twenty litters of lion cubs, which had always been fed on meat, were lost from the development of rickets. At last one litter with advanced rickets was seen by Bland Sutton who advised for them milk, powdered bone and cod-liver oil with meat. They were left with the same environment but in three months they showed no signs of rickets. These animals were thus dying from rickets on a diet of proteid, only of a sort rather difficult of digestion, and were cured by a diet of more digestible proteid with fat. And this leads us to inquire whether the absence of fat in the food may not be an important factor in the production of rickets.

Clinical experience has convinced many of us that much of the severe rickets is produced by feeding with proprietary foods and condensed milk, both of which are very poor in fat. Thus, while mother's milk contains usually 3 to 4 per cent. of fat, and two to three times as much fat as proteid, we find in the ordinary condensed milk less fat than proteid, and in the pulverized proprietary foods from one-fourth to one-fourteenth as much fat as proteid.

Experiments were undertaken by Dr. Herter, of New York, to produce rickets in pigs by fat starvation. One pig was fed fifty-one weeks on a limited quantity of Walker-Gordon skim milk containing $^1/_{40}$ per cent. fat, while sow's milk usually contains 8 to 10 per cent. fat, so that the pig received only $^1/_{300}$ to $^1/_{400}$ the normal amount of fat. During the fifty-one weeks the pig gained 16 pounds. It, however, became constipated, weak and its skin became dry and it was drowsy. It was moribund when killed. Another pig was fed twenty weeks on an unlimited quantity of the same food. It also developed muscular weakness and drowsiness. A third pig was fed fifty-six weeks with skim milk and carbohydrates. This pig developed the muscular weakness and had occasional diarrhea. Other pigs were also used. As a result of the experiments and autopsies on the pigs Dr. Herter concluded that fat starvation in pigs does not cause rickets. No rickety lesions in the bones of these pigs being evident. The most peculiar discovery at the autopsies was the presence of mucoid degeneration, which replaced the fat of the adipose tissue. This mucoid degeneration did not, however, occur in the animals that received an excess of carbohydrates.

It thus seems fortunate that these canned foods for babies contain usually an excess of carbohydrates, since by analogy this fact may have saved the babies fed on them from a mucoid degeneration of their adipose tissue, although subjecting them to fat starvation.

Delcourt, in 1899, held that the lesions of rickets could be produced in animals by the action of phosphate of potash and that he had produced them by the administration of phosphate of potash to dogs. Spellman repeated his experiments. He gave to seven rabbits for a month daily doses of 2 to 5 grams of phosphate of potash. To a young pig he gave 700 grams of phosphate of potash in twenty days. To another rabbit one month old he gave for several days subcutaneous injections of 5 to 50 cc. of a 5 per cent. solution of phosphate of potash. All the animals were killed and showed no macroscopic or microscopic evidence of rachitis.

Spellman, although having failed in obtaining positive results, believed the lesion due to some irritation and thought it most likely that such irritant had its origin in the gastrointestinal tract. In order to determine whether intestinal poisons would cause the lesions of rickets he made repeated injections into twenty rabbits and one cat of extracts of the diarrheal stools of rachitic infants, and in only one of these animals, a rabbit, did he obtain evidence of rachitis. Experiments in feeding animals on the colon bacilli, and others in injecting their toxins, also failed to produce rachitic lesions. The inoculation of cultures of the staphylococcus and in other experiments of their toxins gave negative results. The toxins of the bacillus pyocyaneus gave a like negative result. Morpurgo, however, states that by injecting into young rats a pathogenic diplococcus he obtained typical rachitis. Efforts made by Spellman to isolate a specific etiological organism from the intestine of rachitic infants have also proved unproductive. The theory that intestinal toxemia is the cause of rickets is opposed by Kassowitz who calls attention to the fact that intestinal toxemias are a summer disorder, rickets a disease of winter. In like manner the bone of rachitic infants has been found to contain the same organisms as the bone of nonrachitic infants. The inoculation into healthy animals of bones removed from rachitic infants have in 5 cases given negative results. Notwithstanding his 126 failures and one positive result Spellman is not discouraged and is still pursuing his investigations.

In considering all this experimental work one must remember that one positive result is of the greatest value; while negative results, although of great value for reference in future experiments, should not produce much influence on our opinions, and especially we should not apply to children any deductions from experiments on animals which gave negative results. This statement is well supported by experiments of Spellman in which he subjected various animals to the combination of the conditions we believe to produce rickets in babies: poor air, poor light, defective forms of food, etc., so that in all ten died from gastroenteric disorders in from one to four months, but not one showed any sign of rachitis.

If then we review the positive results of these experiments we must reject those of Delcourt in which phosphate of potash was administered, since they lack confirmation, although repeated by Spellman. Morpurgo obtained positive results in rats from the injection of a pathogenic diplococcus. There is, however, no confirmation of this observation.

Spellman in one experiment obtained rachitis from the injection of extracts of the diarrheal stools of rachitic children. Bland Sutton found that young monkeys deprived of mother's milk and fed on vegetables and fruit became rickety. Two young bears fed on rice biscuits and raw meat had extreme rickets. A lion whelp weaned early and fed on milk developed rickets. The lion cubs already mentioned, fed on raw meat, developed rickets on meat and were cured on milk, ground bones and cod-liver oil. It would seem from a consideration of these positive results that rickets may be produced by an improper food which may be too difficult of digestion or contain too little sugar and fat or too much starch. Also we have evidence that certain bacteria, perhaps intestinal, or intestinal toxins may produce rickets.

Comby, of Paris, considers rickets infrequent in infants nursed at the breast and in support of this statement notes, that in China, Japan, India, etc., rachitis is unknown. These countries to a great extent have in common another factor, a warm climate. Rickets does occur in breast-fed infants and efforts have been made to determine the defects in the mother's milk which produced the rickets. These analyses, however, have been made naturally after the child had well-developed rickets and were thus not analyses of the milk on which the child first developed the disease. Pfeiffer made seventeen analyses of mother's milk supplying 8 cases of rickets. He found no variation in this milk, in fat, proteid or sugar, from that supplied to other infants who did not develop rickets. He found, however, the phosphoric acid diminished one-half in some of the milk furnished the rachitic children but the change was not constant. These observations of Pfeiffer are so far as I know unconfirmed.

The following clinical observations have been made in New York:—

Dr. Eli Long examined in December, January and February, forty-six babies in the tenements of New York, varying in age from one to nine months with an average age of six months. These babies were fed on all sorts of food, breast milk, modified milk, Straus' modified pasteurized milk, condensed milk and some on proprietary foods. Among these forty-six babies, many of whom had dirty and unhygienic surroundings, he found only 7 or 15 per cent. with marked rickets. Three of these were colored (there were only five colored children observed), and one an Italian (the only Italian child observed); of these 7 cases 3 were fed on condensed milk, one on condensed milk and breast milk, 2 on modified milk and 1 on modified milk and breast-milk. The small proportion of cases of rickets observed by Dr. Long may be accounted for by the early age of some of the children and by the fact that only marked rachitis was noted.

Of twenty-one infants varying in age from two to sixteen months and averaging eight months, carefully examined by Drs. Long and Steele, during April at the Pediatric Clinic of the University and Bellevue Hospital Medical School, they found that six showed evidence of rickets, mostly slight, or about 28 per cent. These children were from the tenements and represented the same class as those in whom in Boston, Dr. Morse found that 80 per cent. had rickets.

INDICATIONS OF RACHITIS IN THREE GROUPS OF BABIES.

	No.	Average Age.	Sweating.	Bald Spot on Head.	Rosary.	Pot Belly.	Small Thorax, Large Abdomen.	Delayed Dentition.	Craniotabes.
TENEMENT HOUSE.									
Bottle-Fed..................	13	4½ mos.	0%	77%	70%	46%	23%	....	8%
HOSPITAL.									
Breast and Condensed Milk....	66	8 mos.	35%	76%	91%	57%	42%	16%	45%
Modified Milk...............	25	10 "	20%	56%	88%	44%	32%	50%	12%

I have carefully examined a number of children in two institutions for the care of children in New York. In one of these institutions I examined sixty-six babies varying in age from one to twenty-four months with an average age of eight months. The babies are in large nurseries with ample light and well ventilated during the day. These children are nursed, one woman supplying the milk for two babies. In addition, twice a day, the babies under four months of age receive a condensed milk mixture consisting of a one-eighth dilution of condensed milk with 3 per cent. of cane sugar added, so that the food apparently represents about, fat .9 per cent., cane sugar 9 per cent, proteid 1 per cent. Between three and six months they receive in addition to breast milk a condensed milk mixture with bread crumbs soaked in it which I have figured out to represent about fat .8 per cent, cane sugar 10½ per cent., proteid .9 + starch. Of these sixty-six babies, 23 or about 35 per cent. were noticed to sweat about the forehead; 50 or about 76 per cent. had a bald spot on the back of the head; 40 or 62 per cent. had coated tongues, and 1 had a geographical tongue. Of eighteen children of eight months or more of age, only 3 or 16 per cent. showed marked delay in dentition.

Of the sixty-six babies, 60 or about 91 per cent. had an evident rosary; in 20 it was small; in 33 it was of fair size; in 7 it was large; in 7 the epiphyses were large; in 38 or 57½ per cent. there was the distended abdomen known as pot belly; in 28 or 42 per cent. this was associated with a small flaring thorax, giving the familiar appearance in rickets of a small thorax and large abdomen; 30 or about 45 per cent. showed craniotabes; 22 or 33 per cent. showed an anterior fontanel that was larger than normal.

It is interesting to note that the nineteen children in one of these nurseries that had been having whooping-cough showed no more evidence of rickets than those that had been free from this disease. In this institution with good general hygiene and immaculately clean, of babies fed for the most part on breast milk but supplemented twice a day by a condensed milk mixture representing the formula—fat .9, cane sugar 9 per cent., proteid 1 per cent., 91 per cent. showed evidence of rachitis.

On undertaking to examine children in another institution, where modified milk feeding is used, I noted first the condition of thirteen infants which had been received from the tenements, within a few days. They were rather young, varying in age from three months to nine months and averaging four and one-half months of age.

Of these thirteen children:—none showed sweating; 10 or 77 per cent. bald spots; 7 coated tongue; 9 or about 70 per cent, rosary, 6 small, 2 moderate in size; 6 or 46 per cent. pot belly; 3 or 23 per cent. small thorax and large abdomen; 2 enlarged bosses; 1 craniotabes. Of five of these babies fed on condensed milk all had rosaries; of 3 fed on modified milk one had rickets; of 2 fed on modified milk with gruels both had rickets.

Twenty-five children in this institution who had not been recently admitted, varying in age from three months to nineteen months, and showing an average age of ten months, had all been fed on modified milk.

Of these twenty-five children, 5 or 20 per cent. showed sweating about the forehead; 14 or 56 per cent. bald spot on back of head; 13 or 50 per cent. coated tongues. Of 15, 8 months and over in age, 7 or nearly 50 per cent. showed marked delay in dentition.

Of the twenty-five children, 22 or 88 per cent. showed a rosary;

3 showed enlarged epiphyses; 11 pot belly; 8 small thorax and large abdomen; 3 craniotabes.

On comparing these statistics, we find that the tenement house children make a much better showing than those in hospitals, even when the hospital babies are for the most part breast-fed, and here we have data apparently at variance with the accepted ideas, for in one group of hospital babies we have ample light, good air, cleanly surroundings and mostly breast milk, with 91 per cent. rosaries; while the tenement house babies with bottle-feeding show only 70 per cent. rosaries. We cannot then agree with Morse, who examined for rickets 318 dispensary babies in Boston, and concluded, after a careful study of the nationality and food, that they had only one influence in common, and that was unhygienic surroundings.

CONCLUSIONS.

(1) Experiments on animals would seem to indicate that unsuitable food is capable of producing rachitis and that possibly certain bacteria or intestinal toxins may produce a similar result.

(2) The clinical observations are too limited for any positive deductions, but are interesting inasmuch as they indicate less rachitis in the tenement than in the institution children fed on modified milk, and the greatest amount of rachitis in institution babies fed on breast milk with auxiliary feedings of condensed milk.

DISCUSSION.

DR. ADAMS.—I believe that rachitis is becoming more and more infrequent in proportion to the education of physicians in the proper modification of milk for infant feeding. The result of my observations in institutions is that we have very many less cases of marked rachitis, nowadays, than we had ten or fifteen years ago, and I have attributed it to this fact. The physicians are becoming more intelligent as to the methods of feeding infants; discarding the patent foods which almost invariably conduce to the production of rachitis, as well as other diseases.

DR. MILLER.—It seems to me that almost as important as improper feeding in cases of rachitis, is one of the factors that Dr. Freeman mentioned, namely, the want of sunlight and fresh air. In Philadelphia we have a great many colored people, almost as many as you have in Washington, and rachitis is very common among them. It is also frequent among Italians in our cities, who live in tenements and dark cellars, though they are practically getting the same food that they did at home, where they do not have rickets. I believe in the South rachitis is not very common among the negroes, because they get plenty of air and sunlight; while in Maine coast towns, where the children usually get plenty of fresh air and sunlight, though they are sometimes very improperly fed, either artificially or by mothers who are not able to properly nurse their infants, rachitis is very uncommon. It would seem, therefore, that this is a very important factor in the causation of rachitis.

DR. COTTON.—There is no doubt that a rachitic infant may be found at the breast, but I believe that all agree that it is extremely rare to find a rachitic infant at the breast where there is not a self-evident cause of its development. Examination of the hygiene in almost every instance reveals gross errors. Examination of the diet of the mother usually shows some marked deviation from normal dietetic hygiene. Examination of the mother's milk almost invariably reveals an unbalanced constituency. Infants at the breast of healthy mothers, giving normal milk, do not have rachitis. Why in this disorder we should constantly and positively close our eyes to the fact that the most relief is found in breast-feeding is a matter that I can only explain by stating that we have gotten into the habit of running away from this question of breast-feeding. If one tithe of the time and labor now spent on these other subjects of feeding and rachitis were devoted to the subject of lactation, its disturbances, the physiology of lactation and the hygiene of the mother, I believe relief would be found.

We know where to look for our rachitic cases. We go among the Italians; among the negroes; and occasionally you can find a case of rachitis at the breast; but if you will examine the hygiene and the diet of the mother, and examine the mother's milk, the cause will be very plainly seen. Take the mother, surround her with proper hygienic conditions, make her give good milk and I believe, even though she be changed from the warm to the cold climate, a predisposing factor, the frequency of rachitis will diminish.

I must say that by artificial-feeding there has been a great deal done. At times an infant has been taken from the mother's breast and fed on the best laboratory milk and it did well; but how much better to take the mother and see if we cannot make her give good milk before her next gestation. I believe that this would be an important factor in preventing, not only rachitis, but many acute intestinal disorders.

DR. SHAW.—Four years ago I was in Vienna when Prof. Monti was working on the etiology of rachitis. He found that in nearly every case there was a previous history of some stomach disorder. Examination of the stomach contents showed an increased amount of lactic acid and a diminished amount of hydrochloric acid. His theory was not, that the lactic acid produced the rachitic changes, but that they were influenced by the diminution of the hydrochloric acid. I think most of you have read Zweifel's exhaustive work on the etiology of rachitis in which he laid much stress on the diminished amount of hydrochloric acid in the stomachs of these cases. He showed the hydrochloric acid was dependent on the amount of sodium chlorid ingested, and that the nursing mothers in Saxony received very little salt in their food; hence, their nursing babies frequently showed signs of rickets. He came to practically the same conclusion as Prof. Monti through a different course of reasoning. For the past two years at St. Margaret's I have added salt to the food of every infant and it seems to me that we have had very much less rachitis than formerly.

The Functional Powers of the Liver in Children, Demonstrated by Levulose. — Dominico Crisafi (*Riv. di Clinica Pediatrica,* February, 1903) experimented with levulose on healthy and on sick children. No relation was found to exist between the amount of levulose utilized and the body weight. From the observations on children suffering from diphtheria, measles, or a combination of the two, bronchopneumonia, cardiopathies, chorea, endocranial tumors, nephritis, pericarditis, and pulmonary tuberculosis, it was found: (1) That the dose should be from twenty-four to forty grams in children under five years, and from forty to sixty up to twelve years. (2) In acute infectious diseases the functions of the liver are usually unimpaired. (3) Nephritis and slow tuberculous processes appear to cause the most disturbance to the hepatic function. (4) The phenylhydrazin test is the most delicate of all in the search for traces of levulose in the urine. (5) Levulose is the best substance to use in testing the functional powers of the liver.—*American Journal of Obstetrics.*

Ferments of Milk. — E. Moro (*Jahrb. f. Kinderheilk.,* 1902, p. 391) has investigated Escherich's theory, that the greater improvement which infants who are raised on human milk show, is due not so much to the greater digestibility of the milk, but to the presence in it of certain ferments, which enable the child to absorb and apply its food better. He found in human milk hydrolytic, proteolytic, coagulating lipolytic and oxidative ferments; they are probably all derived from the blood. There is a marked difference between the ferments of human milk and cow's milk, both in quantity and quality, still it is doubtful whether these ferments are of the least importance in the nutrition of infants, even though infants fed with boiled human milk, which destroys the ferments, thrive less than those fed with uncooked milk.—*American Medicine.*

THE VALUE OF THE INCUBATION PERIOD IN THE DIAGNOSIS OF THE ACUTE EXANTHEMATA OF CHILDHOOD.*

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Strictly speaking, the incubation period of a disease is the time which elapses from the invasion of the body by the specific germs to the initial symptoms of an attack of the disease. It is necessary to qualify this by adding that that invasion only is to be considered which results in an attack of the disease, for it is likely that human beings are frequently subjected to repeated invasions by pathogenic germs, all but the last invasion of which are overcome, and it would be manifestly illogical to give as the period of incubation the time from the first invasion (if it could be determined) to the outbreak of the disease.

The duration of the incubation period probably depends on two factors, the virulence of the invading germs and the vital resistance of the individual. To certain diseases, however, the susceptibility of the human race is so great that when an individual unprotected by a previous attack is exposed to the contagion of one of these diseases, an attack of that disease is very likely to occur and the time which elapses from that exposure to the outbreak is, from the clinical standpoint, the period of incubation.

It is not necessary to refer to the reasons for the greater prevalence of some of these diseases in childhood. Three of them, measles, scarlet fever and rötheln, are the ones which I wish to discuss with reference to the value of their incubation periods in the diagnosis of these diseases. This value is largely a matter of personal opinion and the individual practitioner's estimate of it depends partly upon his early instruction, partly upon personal experience and partly upon the experience of others. In reporting an instance of unusual length for the incubation period of scarlet fever, I have added a review of the statements on the subject by various writers, hoping that something of value might appear.

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THE INCUBATION PERIOD OF MEASLES.

The opinions on this come nearer to harmony than for either of the other diseases. Comby, Henoch and Bendix give 10 days as the definite period with 13 or 14 to the eruption; Starr and Ashby and Wright give from 10 to 12 days; J. L. Smith, D'Espine and Picot say 12 days, the latter giving 14 days to the eruption as does Unger; Holt gives a table of cases, 66 per cent. of which were from 11 to 14 days; Rotch and Goodhart agree, giving 10 days as the usual period, with a possibility of 3 weeks; Dawson Williams says 14 days to the rash, but gives variations of 7 to 18 days; Baginsky gives nearly as short a lower limit, 8 days, with 10 as the usual and 14 as the maximum, while Carmichael gives the lower limit as 6 days. Thus, only three writers give a longer period than 14 days, and three a shorter one than 10 days; so, if 3 days are allowed for the preëruptive stage, then the agreement on 10 or 11 days is nearly unanimous.

THE INCUBATION PERIOD OF SCARLET FEVER.

Using the works of the above-mentioned authors, a much wider discrepancy is found for this disease than for measles. The opinions are as follows:—Hatfield (in Starr's Text-Book), under 5 days; Holt, a table, 87 per cent. of the cases being between 2 and 6 days; Rotch, "uncertain and irregular," usually less than 7 days, often 2 to 4 days; Williams, 2 or 3 days, rarely 7; Goodhart, under 7 days, may be less than 2; Ashby and Wright, 2 to 5 days; J. L. Smith, from less than 24 hours to 6 days usually, but he has seen 12 days; Carmichael, 24 hours to 7 days, rarely longer, but he has seen 2 cases 2 weeks after returning home; Unger, 2 to 7, rarely 11 to 14 days; Sevestre (D'Espine and Picot) 4 to 5 days, rarely over a week; Moizard, 7 hours to 17 days; Comby, 1 to 3 days, rarely 7 to 8; Henoch, 4 days or less; Bendix, 3 to 6, rarely 9 days; Baginsky, 7 hours, seen by Thomas, to 20 days, seen by Hagenbach, Loeb, Torday and others.

THE INCUBATION PERIOD OF RÖTHELN.

This is, if possible, even more uncertain than that for scarlet fever. Bendix, Baginsky, D'Espine and Picot, Ashby and Wright and Rotch give 14 to 21 days as the limits; Carmichael and Williams, 12 to 21 days; Comby, 15 days, hard to determine; Boulloche (in Comby's Traité) says under 10 days to be taken with reserve, 18 to 20 days rarely, while 12 and 15 days have been determined exactly in some cases; Unger, 4 to 25 days; J. L. Smith, from less than 7 to 21 days; Plant (in Starr's Text-Book), 7 to 21 days; Holt, 5 to 22 days.

From the above it seems that in measles the vital resistance of the individual plays but a minor part in warding off an attack; the high degree of its contagiousness being a further illustration of this, and it would also seem that the germ has a definite period of evolution analogous to that of the organism of malaria. It also seems that in scarlet fever and rötheln the virulence of the germ and the vital resistance of the patient influence, or rather actually determine, what the length of incubation shall be, and such variations are thereby produced as to render the incubation period of practically no value in the diagnosis of these diseases. More than this, if value is attached to it, we may be led to erroneous conclusions, for in given cases the periods may be identical for the different diseases.

The cases that I wish to report in illustration are the following:—In a family including three children, the youngest, Lillian, four and one-half years old, contracted diphtheria and was sent to the Municipal Hospital on November 22d, returning home on December 18th with a hemorrhagic nephritis which was months in subsiding; she looked to be in good health, the skin being exceptionally smooth and with no traces of desquamation, the nephritis being the only feature which aroused suspicion later that there might have been an overlooked scarlatinal infection either before or during her stay in the hospital. On my visit to her on December 31st I was asked to look at Theodore, aged six years, who was in the same room, his mother having just started to give him his morning wash and her attention being attracted by a rash on his neck and shoulders; an examination showed a diffuse erythema extending over the cheeks, neck, arms and trunk, the temperature being 98.5°F., the pulse 100 and no vomiting having occurred; the boy was isolated and the diagnosis reserved until the next day when, although the temperature was not elevated, the diagnosis was made of scarlet fever based on the general distribution of the rash, which was more intense and was clearly punctiform, the strawberry tongue, the rapid pulse 135, and the occurrence of vomiting, which took place after my visit on the preceding day. As we could not prove that Lillian had not had scarlet fever, and fearing the result of an attack with the existing nephritis, it was thought best to remove Theodore to the hospital.

On January 16th I was called to see Harold, eight years old, who was in the grasp of a very severe attack of anginose scarlet fever, the rash extending from the scalp to the palms and soles. As before, we endeavored to protect Lillian by sending Harold also to the hospital, but he could not be admitted because Lillian had started in a week earlier with a classic attack of measles (coryza, dry cough, high fever, remission, Koplik's spots, and a typical eruption with high fever) and the accommodations of the hospital were insufficient to receive him without exposing a ward of scarlet fever patients to the possibility of an epidemic of measles. The brunt of the nursing fell upon the mother who was forced to go repeatedly from one child, still sharply ill with measles, to the other seriously sick with scarlet fever. The children were kept in separate rooms and disinfection practiced as carefully as possible; Lillian not contracting scarlet fever from this second exposure (a point in favor of the view that her nephritis was post-scarlatinal) and Harold not developing measles. The convalescence of each child was quite regular; Lillian having an almost imperceptible branny desquamation in a week, while Harold peeled in great flakes for about a month.

On the first of March Theodore returned home, having been detained in the hospital with an eruption of chickenpox, and the family moved to another house, hoping to have less sickness; but they were destined still to be interesting from a medical standpoint. On March 18th, Theodore was reported to have some rash and I expected to find measles, but, with a little hesitation, I diagnosed rötheln, and sixteen days later this was strengthened by both Harold and Lillian, who presented as clear signs of rötheln as I have ever seen. The diagnosis of rötheln in Theodore was further strengthened, practically, to complete confirmation one year later, when he had genuine measles, with coryza, Koplik's spots, somnolence, swollen face, fever and characteristic rash.

The strongest argument in favor of Lillian having had scarlet fever is the nephritis, and if we suppose that she did, then we must admit, as I believe everyone is willing nowadays to do, that the contagion can be spread by a patient by other means than the desquamation, probably by the secretions of the upper air passages or by the urine. The argument that she must have had it, or else she would not have contracted it from one of the two exposures is weakened, but not annihilated, by the low degree of contagion of the disease, and also by the clinical fact that members of the same family do not contract scarlet fever so easily from one another as from outsiders. This has been explained by the theory that the chemistry of the cells in the members of a family is somewhat similar, and when the germs of scarlet fever pass through one member of the family, they are so modified as to be incapable of setting up their pathogenic action in another member of that family. However, this does not always hold, so we may still reasonably return to the original contention that Lillian probably had had scarlet fever; that thirteen days after her return home Theodore developed distinct scarlet fever and that seventeen days later, Harold came down with unmistakable scarlet fever. To illustrate my point a little more clearly, if the diagnosis of Theodore's feverless attack had been rötheln, then at a period after that, corresponding to the usual incubation time for rötheln, Harold developed a rash; if Harold had only been mildly ill it would have been very easy to have called his sickness rötheln and much harm might have been done.

With regard to measles with its more distinct period, my own opinion is that this may often be of value in small family epidemics, helping to tell when the other members will develop the disease, but beyond this there is little value to be attached to it.

Tumors of the Kidney in the Adult and in the Child.—Léon Imbert (*Gaz. des Hopitaux,* May 30, 1903) says that the symptoms of this affection are: (1) Hematuria frequent in the adult, exceptional in the child. (2) The tumor itself, noted as a first symptom in about 20 per cent. of the cases in adults, usually the first symptom in the child. (3) *Pain* is neither characteristic nor constant, except perhaps in children. (4) The urine is but slightly altered, except for albuminuria. Disorders of micturition are rare in the adult; in the child there may be retention, incontinence, or even symptoms of cystitis. (5) Compression symptoms may point to compression of the nerves, causing neuralgia and paralysis of the ureter, or of the intestines. Varicocele is apt to occur late in the disease. As to treatment, operation is, of course, the only resource. In adults the statistics of nephrectomy are:—20 per cent. of mortality after operation, 50 to 60 per cent. of a return of the neoplasm, 20 to 30 per cent. of cures. The results are not brilliant, but will doubtless be better when physicians have learned how to make an early diagnosis. In the case of children, the statistics are: 25 per cent. of deaths after operation, 63 per cent. of relapses, 12 per cent. of cures.—*Medical Record.*

THE NECESSITY FOR SUPPLEMENTARY MEASURES AFTER THE REMOVAL OF ADENOIDS.

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The literature on the subject of hypertrophy of the pharyngeal tonsil, of "adenoids," their symptoms, pathology, treatment, their various relations to general health, infectious disease and respiratory affections, with the allied topics of nasal obstruction, mouth-breathing, consequent anemia, aprosexia, abnormal dentition, maldevelopment of alveolar arch, palate, jaw, and thorax, has become so voluminous within the last decade that merely to pick out one chapter, that of the operation for the removal of the nasopharyngeal growths, and to enumerate the titles of all the articles dealing with it would make a rather long pamphlet.

Definite conclusions have generally been reached as to the symptoms and diagnosis of this affection and the importance of early and thorough operative treatment, despite the ever-recurring monographs on the medical treatment of adenoids, in which wonderful results are claimed for the administration of this or that iodin preparation. Surgical interference is a necessity in almost all cases of adenoids; certainly in every case in which they cause nasal obstruction.

One aspect of this subject has, however, received but scant attention from writers; namely, the after-treatment, and the need of a series of supplementary measures for assuring the operative results, producing the habit of nasal respiration, improving general condition, and correcting as far as possible the structural deformities due to the original affection. There is reason to believe that some, at least, of these factors are neglected in practice. As a usual thing it is taken for granted that the operation is the last step; that it settles matters; and the parents, and too often the physician himself, are quite confident that the symptoms, notably the mouth-breathing, will at once and finally disappear. That this is by no means the invariable result all of us will have had occasion to observe. It is a fact of record that in a certain percentage of cases adenoids "come back," even after operation by skilful and conscientious surgeons. I am not aware that any theory explaining such recurrence is generally accepted, but it has always seemed to me that there are facts speaking for their dependence on a failure to establish a free and strong current of air through the nasal passages.

I know of experienced and dextrous operators who make no attempt to lay down rules of hygiene after the removal of adenoids, and who seem to think that nasal respiration must be established automatically, as a matter of course. We know that the normal respiratory current is an important factor in regulating the blood-supply of the nasal mucous membrane, and indirectly in affecting the volume and vascular tone of the turbinate bodies, and that compensatory hypertrophy of these bodies may be a remote result of nasal obstruction due primarily to other causes. If such be the influence on the nasal mucosa, a like rôle may well be ascribed to the respiratory current in the neighboring nasopharynx, which is related histologically and physiologically. A failure to restore nasal respiration should favor the reappearance and the luxuriant growth of adenoid masses, where the predetermining cause, the etiological factor of a constitutional tendency to lymphatic hypertrophy, an adenoid status, is already present.

The adenoid operation when thoroughly done removes an obstruction and permits nasal respiration. It by no means insures it. We have to deal, except in the case of very young children, with subjects in whom the mouth-breathing is habitual and inveterate. They have long since forgotten, if they ever knew, that there is such a thing as free breathing with the mouth closed.

Freeing the nasal route will not be sufficient to side-track the impulse toward mouth-breathing; to reëstablish a form of respiration, the nasal, which has heretofore been difficult and insufficient, and, hence, has come to be instinctively avoided. A training of new inhibitions, encouragement of new volitions, a whole system of coordination, is required to effect this change. The children must be admonished again and again to keep the mouth closed, encouraged to take deep and regular inspirations through the nose; and when supervision and the action of the will are in abeyance, as at night, some mechanical means of keeping the mouth closed may be required for a short time after operation. As a general rule we shall find that if nasal respiration during waking hours has once become firmly established, and is sufficient for even unusual demands such as those of active exercise or the reflex respiratory accentuation following cold ablutions, there will be no mouth-breathing during sleep, and mechanical aids will be unnecessary. Our first aim then is to induce ample and regular respiration; even to increase the demands of the economy for air by exercise and cold sponging, without losing sight of the beneficial influence of both factors on appetite, metabolism and general health, and to see that those demands are met with a closed mouth. For those who are accustomed to nasal breathing, sleep when the mouth is open is almost impossible, and obstruction so disturbing as to awaken them from uneasy and fitful slumbers. Such a habit of reaction we aim to establish in those who have been mouth-breathers, and the first step is insistence on nasal respiration from the moment that the operation has literally opened the way for it. The children must be constantly coached and reminded to keep the mouth closed. Breathing exercises, cold spongings of chest and back followed by brisk friction, play and exercise in the open air, are all important aids to the establishment of a normal respiratory modus. Another factor of breathing which has not received the attention it deserves is that of mastication. During the act of chewing, mouth-breathing is normally absent, and respiration becomes automatically nasal. Conversely, where there is nasal obstruction, and mouth-breathing takes place, chewing is hasty, incomplete and accompanied by labored or intermittent respiration. The children struggle with respiration and deglutition and neither function is performed satisfactorily. The consequences for digestion may be imagined. One of the simplest ways to reëstablish nasal respiration where there is no mechanical impediment is to insist on slow, thorough and prolonged mastication. The oftener this is done the better; and as the children obviously cannot be eating all the time, it is important to accomplish the same result independently of the ingestion of nourishment. For this purpose I have not hesitated to advise parents to allow, in fact to encourage, temporarily, a course of gum chewing immediately after operation. The "awful habit" which has come in for much, perhaps merited, censure seems to me, from observation of its effects in a number of cases, to be a valuable aid in reëstablishing nasal respiration by preventing mouth-breathing, encouraging thorough mastication and tending to a certain extent to develop the jaw. The chewing habit is what we wish to establish; with gum, if it must be, but—the chewing habit.

After the child has become used to the new order of things and has accommodated itself to a condition in which it is possible to chew and to breathe freely at the same time, it is not a very difficult matter to have it give up the use of the gum. The question of the control of mouth-breathing at night will solve itself when normal respiration during waking hours has once been established. Until then it may be necessary to use some mechanical means to prevent the mouth remaining open.

For this purpose various bandages and nightcaps with chin binders have been devised, which aim to keep the lower jaw up. It is difficult to insure this without making the bandage uncomfortably tight; and some means of closing the lips, without necessarily binding up the jaw, as for example a broad piece of impermeable fabric, tied across the mouth, is advisable. Tufts, of Pittsburgh, has suggested a simple and practical means of accomplishing this result.* He uses a piece of silk isinglass court-plaster, about ⅜ by 1¼ inches, or just large enough to cover the mouth. It is moistened and applied to the tightly closed lips. He says that the plan is a little alarming to some; but when they are assured that it can be very quickly removed and that it does not irritate the lips, they accept it enthusiastically; and although there is much joking about it, the method is found to be as popular as headgears were objectionable. The same result may be accomplished by the use of the "respirator," a soft-rubber prothesis like an oval disc, which is placed between the lips and the alveolar arch.

A second detail to which after-treatment should be directed is that of the faulty arrangement and crowding of the teeth, and the consequent malformation of the alveolar arch and under-development of jaw and chin. The oft quoted adage: *"cessante causa cessat effectus,"* applies as little to this feature of the case as it does to the bow-legs of rickets or the saddle-nose of tertiary syphilis. Removal of the adenoids is not sufficient to restore the normal dimensions and contour of the alveolar arch, to straighten the line of crowded, overlapping and tilted incisors, to flatten the Gothic vault of a steep-roofed palate, or to fully correct the features of an "adenoid face."

It is questionable whether after a certain age much can be done for these defects, and this fact impresses on us once more the importance of early and thorough operation, and of rational after-management, and the futility of wasting time with the medical treatment of adenoids. After operation the use of iodin compounds, with iron or other tonics, may be of use to assist in preventing a relapse where we have to deal with the adenoid status. Even then it is of relatively minor importance. Much can be done, however, for the teeth and jaw if taken in time, and here the intelligent dental surgeon is our ally and hope.

114 West 126th Street.

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ARCHIVES OF PEDIATRICS.

APRIL, 1904.

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WHAT IS THE BEST ANESTHETIC FOR CHILDREN?

The administration of anesthetics to children is a subject which presents some features of peculiar interest and importance. The statistics of anesthesia prove that deaths from anesthetics are relatively more frequent in children than in adults and it is the writer's belief that certain errors are prevalent, regarding the use of anesthetics in children, which are responsible for a large percentage of these deaths.

A brief review of the status of the different anesthetic agents commonly employed, together with some comments based on a long and extensive experience in the administration of anesthetics, will serve to point out these errors and indicate how they may be avoided.

Chloroform.—There is a firmly fixed and widespread belief that chloroform is the best anesthetic for children, and the belief is carried to the point of supposing that this agent is less dangerous in them than in adults, or that they possess a special immunity from its dangerous action not enjoyed by older individuals.

This is a grave error, without foundation, and is responsible for the common and dangerous practice of choosing chloroform for children simply because they are children. The writer believes that chloroform is a particularly dangerous anesthetic for children; and this conclusion is based upon the personal observation of many cases of more or less alarming depression of the circulation and respiration during the careful administration of this anesthetic. The induction of anesthesia in children must often be accomplished during crying and struggling, and the great irregularity of the respiration under these circumstances makes it difficult to administer chloroform in the gradual, smooth manner which is so necessary for safety. Sudden overdosage is exceedingly common at this time; the administrator, anxious to quiet the child, is tempted to add the chloroform faster than he would if the patient were quiet, and thus the intake of anesthetic is increased at an alarming rate. If the dropping of the chloroform on the inhaler is doubled and the respiration exaggerated by crying and struggling to three times the quiet respiration, the patient will receive about six times as much chloroform as he should. This is not an overestimate of what often occurs, and it explains that familiar picture of a child struggling under chloroform, suddenly becoming quiet, pale and deathlike, with failing pulse and respiration. It is a case of either overdosage or too rapid dosage; either the amount administered has been too great or an amount which would seem reasonable has been taken in too rapidly.

It is necessary, therefore, to proceed with great caution and to add chloroform at a slower rate during crying, struggling and exaggerated respiration, than during normal breathing. Children generally become quiet quite suddenly during the induction of chloroform anesthesia, and it is a wise plan to suspend the administration for a moment when this occurs and note the effect of the dose which has already been taken in. It will often be observed that a marked and prolonged effect follows the initial dose and this demonstrates the wisdom of the pause in the administration; as otherwise an unnecessary and perhaps dangerous amount may be given. When it is seen that the initial dose has not been excessive, the administration may be resumed and as the respiration is now more regular the narcosis progresses with much greater safety.

The most important principles of chloroform administration are the avoidance of a concentrated vapor and an even use of the smallest amount of the anesthetic compatible with satisfactory anesthesia.

While chloroform is not to be recommended as a routine anesthetic for children, ether being preferable as a rule, there are certain conditions which reverse this order. In the presence of acute bronchitis, pneumonia, nephritis and marked respiratory obstruction, chloroform is usually to be preferred to ether, as the latter aggravates these conditions to a much greater degree than chloroform. Diluted chloroform, as in the A. C. E. and similar mixtures, is safer than pure chloroform, as it yields a more dilute vapor. The mixtures should be administered in the same manner as pure chloroform, drop by drop.

Ether.—There is a very general belief that ether is an unsuitable anesthetic for children. They are said to take it badly and to be greatly irritated by it, so that the respiration is interfered with by choking, coughing and by an excessive flow of mucus. These unpleasant effects are due chiefly to faulty administration and the fault is in using too much ether and forcing it upon the patient too rapidly. Whatever form of inhaler is employed, the ether should be presented very greatly diluted at first and it should be increased so gradually as to avoid these effects as completely as possible. In this way ether may be given to children with great satisfaction, particularly if preceded by nitrous oxid and a transition gradually made from that anesthetic to ether. Nitrous oxid should be used with great caution and sparingly in infants even in this way before ether and in all children air should be given at an early period.

There is no question whatever of the great safety of ether and it should be chosen as the routine anesthetic for children except in the conditions above named as rendering chloroform preferable. Such circulatory depression as is commonly caused by chloroform, practically never results from ether; on the contrary, the circulation is almost invariably markedly stimulated.

Nitrous Oxid.—Children are not as favorable subjects for nitrous oxid as adults. They do not stand the necessary deprivation of oxygen well and present asphyxial symptoms at an early period and to a marked and often dangerous degree.

Thus the prolonged administration of nitrous oxid in children is not to be recommended, and the writer is prepared to pronounce it a dangerous practice. For momentary operations it is reasonably safe and fairly satisfactory but the resulting anesthesia is apt to be very brief. Nitrous oxid mixed with air or oxygen yields better results and is less dangerous than pure gas.

Ethyl chlorid and ethyl bromid are meeting with considerable approval as general anesthetics for brief operations in children and adults, but as yet their true position as to safety has not been determined and it will take some years for sufficient data to appear even to approximate it. In the meantime they should be used cautiously. They act with great rapidity and therein lies danger if they possess qualities similar to those of all other anesthetics.

THOS. L. BENNETT.

The Proceedings of the London Society for the Study of Diseases in Children have been an important feature of the Society reports in this journal. The Society has done much to increase interest in the subject of pediatrics; and now, to extend its field, has undertaken the publication of a monthly magazine, entitled, "The British Journal for Children's Diseases," edited by George Carpenter, M.D., a name well known on this side of the Atlantic. The first number of the journal acknowledges the indebtedness of the medical profession to ARCHIVES OF PEDIATRICS. It expresses the belief that the time has come when the publication of a journal devoted to the reports of the London Society is justified. We wish this new journal all success. We hope to see among its contributors the names of all the best known workers in pediatrics.

"Measles without Measles."— Capurbano (*Gaz. degli Osped. e delle Clinich.*, May 3, 1903), a physician in a rural commune in Italy, reports his observations in a recent epidemic of measles which he had studied most carefully from its introduction into the village through the exposure of one child. The noteworthy feature of this epidemic was the occurrence of 3 cases of measles without any eruption, *i.e.*, morbilli sine morbillis. In these, the other symptoms of measles were present and the course corresponded to that of the typical disease, but there was no eruption. All three children recovered, although in 2 of the 3 cases the infection seemed to be severe. Capurbano did not find in these cases the diagnostic symptom described by Roger, namely, the increase in size without change in color, of the papillæ of the tongue.—*New York Medical Journal and Philadelphia Medical Journal.*

The Anti-Pertussis Serum of Leuriaux.—Victor Jacques (*Bull. de la Soc. Royal. des Sc. Médical. et Naturell. de Bruxelles,* May, 1903) reports a number of cases in which injections of this serum were made to overcome the attacks of coughing in pertussis. In nearly all of them the attacks were reduced after five or six days to one or two in twenty-four hours, following one injection of the serum. Not only the number but the intensity of the coughing spells were diminished. In cases treated from the onset, recovery appeared complete in from ten to fifteen days. In a few cases in which the action of the remedy appeared to be slow, a second injection was administered. The serum does not induce a rise of temperature as a rule; if any occur it is slight. Five times out of 28 cases, urticaria followed the injection, but the pertussis was cured nevertheless. The serum does not increase the number of white corpuscles.—*Medical Record.*

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The Blues (Splanchnic Neurasthenia), Causes and Cure. By **Albert Abrams, A.M., M.D. (Heidelberg), F.R.M.S.** Illustrated. Pp. 240. New York: E. B. Treat & Co., 1904. Price, $1.50.

This is a very common-sense exposition of the subject, simply and plainly stated, giving a good summary of the symptoms and method of treatment.

The author shows that it is a condition dependent on many causes; placing heredity in its proper place and demonstrating that its influence can be largely modified by general hygienic rules of life. He very properly says that many persons are overworked without knowing it, blunting their sense of fatigue by artificial stimulants, as coffee, alcohol, tobacco, etc.

While approving of muscular exercises over exertion to the point of fatigue is condemned, producing injury rather than benefit to a system already exhausted.

The summary of symptoms on page 37 is admirable. The chapter on general treatment while presenting nothing novel calls the attention again to the general etiology of the disease.

The chapter on Splanchnic Neurasthenia in which is brought forward the fact of a general relaxation with often no special symptom of abdominal distress as exhibited by the patient is very suggestive.

Local abdominal plethora being often easily removed by the usual methods, massage, electricity, muscular exercises, etc. Some of the statements in the appendix may not be generally accepted, but are worthy of consideration.

Practice of Obstetrics, Designed for Students and Practitioners in Medicine. By **J. Clifton Edgar**, Professor of Obstetrics and Midwifery in Cornell Medical College, etc. Illustrated. Pp. xvi.-1,111. Philadelphia: P. Blakiston's Son & Co. 1903. Price, $6.00.

A volume on obstetrics concerns the pediatrician in the chapters that describe pathological conditions affecting the fetus and the diseases and accidents associated with birth. In Dr. Edgar's attractive book the section on the physiology of the newly-born treats of the general phenomena, of the establishment of respiration, changes in the fetal circulation, management of the umbilical stump and ring, temperature, urine, digestion, blood, etc., all of which relate to the period immediately incident to and after birth. The second division of the subject, on the hygiene and management of the newly-born, describes the care of the cord, the bath, and infant feeding. With this last the obstetrician has usually the direction for the first few days, or until the mother passes out of his hands, unless it be that he is a general practitioner who cares both for mother and infant. Dr. Edgar's suggestions as to maternal nursing are desirable and practical. He makes no statement to indicate that this cannot be done in the majority of cases, but he says that artificial feeding must be resorted to if the mother cannot nurse her child and a wet-nurse is not available. Dr. Edgar's rules for artificial feeding are most of them taken from Dr. Winter's formulæ. He also advocates the use of a barley diluent. Dr. Winter's formula for the top 1 ounce of cream from a quart of milk with 9 ounces of water is given for the first, second and third days. Some of the modifications given in Dr. Winter's tables could be made lower percentages, and in common with other tables, they give only approximate percentages. Almost every baby fed artificially must be guided according to its digestive strength. Dr. Baner's method for getting percentage formulæ is given. Owing to a typographical error, Dr. Baner is called Dr. Bauer.

The sections quoted contain as much general information as can be crowded into a volume on obstetrics, but the diagrams of the eruption of the teeth, which will not appear before the third to the tenth month, are out of place. The infections of antenatal origin, the infections which originate intrapartum, fetal traumatisms and infections, as well as the diseases of bacteria and fungi, are satisfactory. Under the head of hemorrhages, however, we see no mention of the hemorrhage associated with changes in the adrenals. Few exceptions may be taken to the subjects mentioned. Some notice might have been taken of stenosis of the pylorus, which is quite often seen shortly after birth and is then under the observation of the obstetrician. In the division of gastro-intestinal sepsis more stress should be laid on the infections due to too frequent attempts to wash the mouth of a newly-born baby. The whole volume is so distinctly an obstetrical contribution that it is with some regret we limit our review to the sections devoted to the newly-born.

The American Year-Book of Medicine and Surgery for 1904. A Yearly Digest of Scientific Progress and Authoritative Opinion in all branches of Medicine and Surgery. Under the editorial charge of **George M. Gould, A.M., M.D.** In two volumes. Illustrated. Pp. 673. Philadelphia, New York, London: W. B. Saunders & Co. 1904. Price, per volume, cloth, $3.00 net.

In the department of pediatrics Drs. J. P. Crozer Griffith and J. C. Gittings succeed Drs. Starr and Hand. It is hardly necessary to state that this portion of the Year Book is not below the standard of previous years. American and foreign literature has been thoroughly read and condensed conclusions are given that in any other form would require months of study. An interesting chapter is the one on diseases of the ductless glands, development and nutrition. The other parts of this volume are equally good and comparisons are invidious.

Progressive Medicine. Vol. I., March, 1904. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by **Hobart Amory Hare, M.D.,** assisted by **H. R. M. Landis, M.D.** Pp. vi.-337. Illustrated. Philadelphia and New York: Lea Brothers & Co. Per annum, in four cloth-bound volumes, $9.00; in paper binding, $6.00.

The first volume of Progressive Medicine for 1904 is issued in paper at a reduced price. The paper cover and the lessened cost do not lower the value of this important digest. Crandall makes extended quotations from the papers of Jacobi, Snow, Freeman, Hamill, Nicholson, Wilson, Morse and others, whose articles have appeared in these pages. The literature of pediatrics is well collated and the section on children's diseases is an able medical review. The same completeness is to be found in all the sections.

Society Reports.

THE NEW YORK ACADEMY OF MEDICINE.—SECTION ON PEDIATRICS.

Stated Meeting, February 11, 1904.

DAVID BOVAIRD, JR., M.D., CHAIRMAN.

CASES OF SPORADIC CRETINISM.

DR. LOUIS FISCHER showed several patients who had the disease, and presented their histories.

CASE I.—R. H., over two years old was first seen when eighteen months old. The child was breast-fed for seven months and later received equal parts of milk and water. Always constipated and at times had severe tenesmus. She had coarse sparse hair and a very rough skin. The tongue and lips were thick and the tongue protruded. There was difficult breathing and snoring. The thorax was rachitic, there was a funnel shaped depression, a kyphosis and an umbilical hernia. The child could neither talk nor stand and there were no teeth. The temperature was subnormal, the pulse 100, small and feeble. The circulation was decidedly poor and the anterior fontanel was widely open. Growth was markedly stunted, the length of the body being only 55 cm. and the muscles were flabby. The naked weight when one and half years old was 11 pounds and 13 ounces. At twenty-two months the first tooth appeared. The patient was given fresh raw milk warm; also steak juice, orange juice, potato flour and the usual antiscorbutic remedies. Fresh albumen and vegetable proteids were well assimilated. Thyroidin in doses of one-half grain three times a day, gradually increased to three grains, was given. Also Fowler's solution in one drop doses increased to three drops three times a day. During the six months' treatment the child had grown in length from 55 cm. to 69 cm. and the weight had greatly increased.

CASE II.—E. P., was first seen December 8, 1902, when the child was two years and two months old but had been under thyroid treatment ten months before. She could neither walk nor talk. The tongue was thick and protruded constantly. The lips and skin of the face were thick, coarse and rough. The nose was short and flat. The fontanel was widely open, the face broad, and eyes set far apart. There was a marked depression on each side of the temporal bone and a marked frontal prominence. When twenty-two months old the child had nine teeth. The first tooth appeared one month after thyroid treatment was begun at the Babies' Hospital, or when the child was sixteen months old. There were no evidences of rachitis. The body length was 50½ cm. or about 20 inches. Secretions of the body were scant and the constipation obstinate. The thyroid gland could not be felt. The temperature was subnormal and never higher than 98°F. One grain of thyroid was given three times a day and increased to two and a half grains, without any cardiac disturbances. Cereals, milk, chicken soup, broths, acid fruits, etc., were given. The body length at the end of the first month of treatment was 58½ cm., amounting to an increase of 3⅛ inches. The bowels became regular. The teeth have appeared at regular intervals, and the child has begun to walk and talk. At the end of one year's treatment the body length was 85 cm., showing she had grown in one year 15½ inches.

Case III.—R. N., was first seen June 28, 1902, when seventeen months old. The infant was nursed for about sixteen months, but had not thriven after she was three months old. Severe constipation had always existed. She could neither stand, talk nor walk. Backwardness in development was very apparent. The hair was coarse and straight. The extremities were short and growth much stunted. The lips were thick and the tongue large and protruding. She had only two lower incisors. Equal parts of barley-water and milk were given the child every two hours. One-half grain of dessicated powdered thyroids was ordered three times a day. This dose was gradually increased and the child was now receiving three grains three times a day, without evidence of cardiac disturbance. Lemon and orange juices, raw albumin, vegetable soups, etc., were ordered. The condition of the child improved very much and the specific effect of the thyroid was very apparent.

Dr. Herman said that he considered the best plan of administering thyroid was to begin with small doses and to increase them gradually, watching the temperature carefully. Under this treatment the intelligence of the children seemed to improve greatly for a time; but the children never attained the normal state.

Dr. Sobel said that constipation was one of the most marked features in these cases. He relied mainly upon three symptoms to aid him in discovering whether improvement was taking place:

(1) The control of the temperature; (2) the control of the constipation; (3) the decrease in the weight. He called attention to the marked dilatation of the sublingual veins which appeared much like varicosities; this was due to the interference with the circulation in that particular part.

Dr. La Fétra said that there were always 8 or 10 cases of sporadic cretinism under treatment at the Vanderbilt Clinic. Improvement at first is remarkable, but only a few cases have been observed for a number of years. Those he had seen were two or three classes behind pupils of the same age, even in most favorable cases.

HERNIA OF THE APPENDIX.

Dr. Henry L. K. Shaw, of Albany, presented a specimen and drawings of this condition which occurred in a child, eleven months old, who was an inmate of the Albany Orphan Asylum. The interest in this case was revealed at autopsy. (The full report of the case, together with a drawing illustrating the condition, will be found in Archives of Pediatrics, March, 1904, p. 192.)

Dr. H. D. Chapin called attention to the fact that the appendix in infants was always long and tortuous and it was to him a wonder that this organ was not more often at fault.

A CLINICAL STUDY OF 62 CASES OF INTESTINAL INFECTION BY THE BACILLUS DYSENTERIÆ (SHIGA).

Drs. L. E. La Fétra and John Howland presented this paper which will be found in full in Archives of Pediatrics, March, 1904, p. 161.

Dr. R. G. Freeman said there seemed to be a difference of opinion regarding the true Shiga bacillus cases and the socalled "acid" type; it was not known whether they were the same organism or different varieties. The cases that he had seen were of the "acid" type. In an epidemic quite near New York the real Shiga organism had been found. Last spring he was on duty in three hospitals and carried on his work under the supervision of Drs. Flexner, Park and Hiss. An ample amount of serum was supplied him. The clinical manifestations were very irregular and atypical, except in one or two instances. The characteristic feature was that these cases did not react readily to treatment. The stools were usually greenish-yellow or green and always contained mucus and, with few exceptions, some blood. Usually the organism was not found unless there was blood present in the passages.

The stools averaged six a day. The course ran from one week to ten days. The mortality in the different institutions varied greatly. The autopsy findings were as atypical as the symptoms. Sometimes there was a mild and sometimes a severe ileocolitis. In order to test the results of treatment every other case was injected with the serum, the dose being 10 cc. and repeated at frequent intervals. Some patients gave a marked reaction and good results seemed to increase with the increase in the dosage. But when the mortality rate was studied it was found to be about the same as when no serum had been used. In the institutions where he saw the cases the bacteriological reports were usually very late and the serum was administered late. In the "acid" or "Harris" cases he did not always use the "Harris" serum. As a result of his work he did not believe it could be positively stated that serum did any good.

DR. HENRY L. K. SHAW, of Albany, said he had had some experience at Albany and there was no doubt that the cases seen by him were true cases of Shiga dysentery, occurring in both adults and children. The Shiga bacillus had not been uniformly found in the stools of ordinary diarrheas. Again it was found that in some true cases of dysentery the Shiga bacillus had not been found. In a place near Albany there had occurred an outbreak of dysentery and there was obtained a true culture of this bacillus; he believed that this disease could almost be considered as endemic. The same could be said of Tuckahoe where the disease seems to be endemic.

DR. WILLIAM L. BANER said he had examined 30 cases for the dysenteric bacilli, investigating stools that were watery or contained a little mucus and he had made ten plates in each case and from one to 500 colonies. He had also made the agglutination reaction.

DR. E. LIBMAN drew attention to certain defects in the work that was being done and which should be remedied. He said it was not a question of numbers. The point was that the bacillus was found when mucus was present and even more easily when there was also blood. Therefore, it looked as if they were dealing with an organism which might possibly be present, normally, in the upper part of the intestinal tract and which would multiply under certain conditions. As a rule, when mucus was found in the discharge the bacillus was found. The upper part of the intestinal tract should be examined, a work that so far had not been done. With regard to the futility of the serum in dysentery he said that one could not expect a great deal from it because there were changes in the walls of the intestines and symptoms of toxemia present. In slight cases he said the cause of death was not poisoning but was from the constant drain from the system and the loss of valuable food.

Dr. L. E. La Fétra said the paper did not undertake to prove that the cause of diarrhea occurring in infants is the dysentery bacillus. The writers wished to show that the symptoms varied greatly, when there was an infection of the gastrointestinal tract by this organism. He said that to examine the flora of the intestinal tract and identify all the organisms in each case was a mechanical impossibility. The serum should be used in large dosage in order to prove effective. He said it was well worth contrasting the cases as they occurred in the Babies' Hospital and in dispensary work. During the months of July and August there were treated at the Babies' Hospital 78 cases of diseases of the intestines; of these 78 cases 24 were infected with the dysentery bacillus, *i.e.*, 30 per cent. In the Vanderbilt Clinic 62 out of 64 cases showed the dysentery bacillus. The bacteriological examinations, however, were made by different observers in the two institutions. Of the 24 hospital cases 12 died, a mortality of 50 per cent. Of the 54 hospital cases not showing the bacillus dysenteriæ, 18 died—a mortality of 33⅓ per cent. The serum treatment was used in 7 of the severe hospital cases and 5 died. The immediate effect of the serum was often good, being followed by a disappearance of the blood. The bacteriological report of the investigation would be published by the Rockefeller Institute.

DISEASES OF THE ACCESSORY SINUSES OF THE NOSE IN CHILDREN.

Dr. Lewis A. Coffin presented this paper and illustrated parts of it with lantern slides. He first considered the gross anatomy of the nose and made the following deductions:—(1) Only two of the accessory sinuses are present at birth, viz., the ethmoidal cells and the maxillary antrum. (2) The ethmoidal cells and the antrum are constant sinuses. (3) The antrum does not in infancy occupy the same relative position in regard to the orbit as in later life, and cannot be reached or entered by the usual methods. (4) The sphenoidal sinus makes its appearance shortly after birth, and may be found as a distinct cavity as early as the end of the first year. Practically, however, it may be considered as the most posterior of the posterior ethmoidal cells. (5) The frontal sinus is not present at birth. It appears first in the orbital plate of the frontal bone between the end of the first and the beginning of the third year. Practically at this time it is the most anterior of the anterior ethmoid cells.

Diseases of the sinuses at this age are usually treated in a general way. An acute catarrhal or nonsuppurative sinusitis was probably the most common disease; occurring during the course of one of the infections the sinuses of the nose, one or all, become infected and there results a suppurative sinusitis, whose severity depends upon the character of the infection, the intranasal structure, the condition of the nasal mucous membrane and the physical equation of the patient. Those infectious diseases most likely to be accompanied or followed by sinusitis are the various exanthems, acute coryza, and above all influenza. Trauma might be an exciting cause.

Because there was no recognized and definite *symptomatology* the disease probably existed much more frequently than supposed. In the ordinary cases two symptoms were present, viz., profuse nasal discharge and pain. The discharge might be mucoid, mucopurulent or purulent and, if confined to one side, was most significant. The location of the pain in the head by no means located the disease, although this was a symptom of importance. On examining such a patient one usually found the discharge of pus between the middle turbinated bone and external wall of the nose, *i.e.,* in the middle meatus; and one should then conclude that the disease affected one of the anterior cavities, the frontal sinus, anterior ethmoidal cells, or the antrum. A like discharge in the olfactory cleft or between the turbinated and the septum, pointed to disease of the posterior ethmoidal cells, the sphenoidal sinus or both. In the more severe cases the pain was greater and might be felt in and about the eye, and there might be swelling of the lids and exophthalmos. This might occur, also, with diseases of the anterior ethmoidal cells, frontal sinus and antrum, the point of greatest swelling, the position of the eye or, possibly, a sinus opening, indicating which sinus was involved. Severe occipital pain, and pain back of the eye, together with pus seen in the superior meatus pointed to the severer type of sphenoidal disease.

Treatment must be either palliative or radical. In the less severe cases every effort should be made to establish free drainage and to this end sprays of a weak solution of cocain and adrenalin should be used several times a day, together with frequent steaming of the parts. The internal use of suprarenal extract had been of value in his hands. Intranasal probing and catheterizing in children was not practical, and one of the radical operations must usually be done. In adults various openings and routes to reach the various sinuses had been resorted to. Ethmoiditis was probably the most frequent of the sinus diseases from which children suffered, and for radical operation an incision was made in the side of the nose parallel with its anterior border and near the inner canthus. The periosteum was then raised and an entrance effected into the ethmoidal tract through the os planum, or by a partial disarticulation and reflection of the nasal bones. A thorough opening of the entire ethmoidal tract, including the sphenoidal sinus, was now easily made. Having curetted out this labyrinth of cells the cavity should be packed with iodoform gauze. The passages soon fill with granulations and the patient should be well in one or two months. Histories of several cases were then related in order to illustrate certain of the points.

DR. C. G. COAKLEY stated that Harper had performed autopsies on thirty children, who had died of various infectious diseases, and had found a suppurative involvement of the accessory sinuses in all. The reason the disease was not recognized earlier was because of the intractibility of children when under examination.

DR. W. L. STOWELL felt quite sure that many cases that were reported to be meningitis that recovered, and did not present any definite symptoms, were not cases of meningitis at all but ethmoiditis or other sinus disease.

DR. EMIL MAYER said there were two definite conditions to be considered, (1) external injuries producing bone disease, fistula, and so an entrance into the accessory sinuses; (2) infection from such diseases as scarlet fever, diphtheria, and influenza.

Urotropin as Prophylactic Against Scarlet-Fever Nephritis.— Widowitz (*Wien. Klin. Woch.*, Vol. XVI., No. 39) has never had a case of nephritis among his 102 scarlet fever patients since he introduced the plan of preventive administration of urotropin. He gives from .05 gm. to .5 gm. of urotropin three times a day, according to age, during the first three days of the disease, and again at the beginning of the third week, for another three days.—*Journal American Medical Association.*

THE PHILADELPHIA PEDIATRIC SOCIETY: REPORT OF THE MILK COMMISSION.

Read before the Society February 9, 1904.

The last report of your Commission to the Society was made on the evening of January 14, 1902. At that time, the plan of organization, a detailed report of the requirements of the Commission and a review of the work of the Commission from its beginning up to that date, was submitted to the Society. Inasmuch as the requirements are in general the same as then, it seems unnecessary to restate them. We desire, however, to report that we have established a bacteriological standard for cream, in the preparation of which we were engaged at the time of our last report.

After a series of bacteriological examinations of cream produced by one of the dairies to whose milk we were certifying, a standard of 25,000 bacteria to the cubic centimeter was determined upon. This has proven to be less rigorous than might have been required, inasmuch as the vast majority of the creams we have examined, as can be seen by a study of the tables, have had a bacterial content of less than fifteen thousand.

Certain minor changes have been made in the chemical requirements. The standard originally established for 16 per cent. cream (the only cream to which we certified at first) allowed a variation between 16 and 20 per cent. This was soon found to be unsatisfactory, as the variation was usually between 14 and 18 per cent. Consequently, we changed the variation to correspond to these figures. In the case of 20 per cent. cream, to which we are now certifying, a variation between 18 and 22 per cent. is allowed. When the 16 and 20 per cent. creams are made by the dilution of a higher percentage cream with skimmed milk, we certify to these higher percentage creams without a bacteriological examination, provided the dilutions come within the requirements.

At the time of our last report, on the recommendation of our then chemist, we had given up the direct estimation of the proteids, determining only the total solids, fat and specific gravity. In the latter part of 1902, Dr. D. L. Edsall was chosen chemist for the Commission, and at his suggestion, based upon his recognition of a wide variation in the proteid percentage of milks, we determined to require the estimation of the proteids. After the course of a few months, we found it necessary to change the variation of the proteid. Our original standard was 4 per cent. with a variation of 0.5 per cent. on either side, but the frequent failure to get above 3.5 per cent. proteid, on the part of all of the milks, led us to lower the standard to 3.5 per cent., with a variation between 3 and 4 per cent.

The variation for the fat content has not been changed. We have, however, since the last report, begun to certify to 5 per cent. fat milks. We have been much more stringent in our examinations for the presence of diluents, preservatives, coloring matter and the application of heat, and we have made the determination of the acidity of the milk one of our requirements, no milk being allowed to have an acid reaction of more than 22° (22 cc. of decinormal acid solution in 100 cc. of milk).

One of the dairies under our certification at the time of our last report, has withdrawn on account of difficulty in meeting our requirements, and a second one has been dropped for failure to come up to our standards. The Walker-Gordon Laboratory Company has remained under our certification, and, in the place of those which have dropped out, we now certify to the product of the Willowbrook Farms, Willow Grove, Penn. (milk and cream); The Haddon Farms, Haddonfield, N. J. (milk); The Purity Milk Company, Trenton, N. J. (milk); The Wawa Farms, Wawa, Penn. (milk and cream); and the Bryn Clovis Dairy, Malvern, Penn. (milk). In other words, the number of dairies, to which we certify, has increased from three to six and, instead of certifying to three milks (the output of three dairies), we now certify to seven milks and four creams, the product of six dairies. It is evident, therefore, without further comment, that the demand for certified milk in Philadelphia has increased. The total output now is many times greater than it was two years ago, but we regret to state that the demand for clean milk has not increased as rapidly as either the producers, the dealers or our Commission had hoped it might.

We are inclined to attribute this fact, in large part, to a lack of appreciation on the part of the general public, lay and professional, of the advantages of a clean milk. If any of the ordinary uncooked foods, which we consume, were prepared under as unhygienic conditions and contained the filthy products that the ordinary market milks contain, we would not tolerate them. The only standard by which milk seems to be judged is its price; not on the principle that the highest priced, but rather that the cheapest, milk is the best. The average individual, unfortunately, does not consider the amount of filth he is daily purchasing in the shape of food for his infants and children. If he did, it ought, in theory at least, to be an easy matter to induce him to pay the relatively moderate difference in price between the poor product and the pure product. In the selection of meats for our households, we do not choose the dealer who will sell us meats at the lowest price. We would not trust the methods of the cheaper dealer. But in the selection of milk, the contamination of which is much more difficult of detection, we find ourselves buying from the cheapest vendor.

In order that the results of the work of the dairies under the certification of your Commission during the past two years may be carefully and conveniently studied, we present them in charted form.

A summary of some of the facts contained in these charts proves interesting and instructive. It will be noted the charts are so constructed that the results of the work in the individual dairies can be studied separately. Dairies A and B represent those which are no longer under the certification of your Commission, and from what has been said, it is unnecessary to emphasize the fact that their results have not been gratifying. It may be desirable, before proceeding further, to remind you that your Commission has placed no limit upon the number of re-examinations it is willing to make, preferring to determine this point by a careful consideration of the conditions under which the milk is produced and the results of the individual examinations. We recognize the fact that temporary conditions, such as loss by fire, temporary ice famines, etc., may and do sometimes arise, which make it impossible for the most completely equipped and carefully conducted milk farms to produce milks and creams up to the standards which we have established. During such periods, however, we temporarily withdraw our certification.

Dairy A.—In thirty-two monthly examinations of milk from this dairy, the bacteria were above our standard of 10,000 on the first examination ten times; on the second examination four times; on the third examination once. The highest count ever recorded

BACTERIOLOGICAL REPORT.

1900	Dairy A	Dairy B	Dairy C		Dairy D		Dairy E		Dairy G			
	Milk	Milk	Milk	Cream	Milk	Cream	Milk	Cream	Milk		Cream	
									4 per cent.	5 per cent.	16 per cent.	20 per cent.
July	f. 17,416 s. missing											
Aug.	f. 16,500 s. 13,333 t. 2,333†											
Sept.	f. 18,158 s. 7,041†											
Oct.												
Nov.	3,250											
Dec.	2,250	1,583										
1901												
Jan.	3,083	3,451	958									
Feb.	2,900	f. 12,666 s. 4,541	5,875									
Mar.	f. 22,500 s. 4,580	3,000	5,983									
April	1,541	3,233	f. 14,291 s. 3,791									
May	7,375	7,626	f. 13,208 s. 7,333									
June	8,208	f. 15,250 s. 11,666 t. 7.041	1,125									
July	f. 147,016 s. 9,585	f. 44,250 s. 6,541	3,958									
Aug.	f. 22,900 s. 5,791	f. 12,833 s. 25,750 t. 2,041	3,418									
Sept.	6,041	5,083	8,666									
Oct.	4,458	2,041	8,208									
Nov.	7,841	375	916									
Dec.	f. 25,833 s. 100,000 t. 49,666 f. 375	458	1,600									
1902												
Jan.	5,750	f. 100,000† s. 3,583	2,541									
Feb.	3,500	f. 75,000 s. 4,208	2,583									
Mar.	f. 150,000 s. 90,000 t. 11,033 f. 9,053	f. 67,000† s. 27,000 t. 12,416 f. 6,458	f. 72,000 s. 4,208									
April	f. 30,750 s. 18,333 t. 6,666	4,075	5,875									
May	7,583	10,000	1,000									
June	f. 10,708 s. 3,205	f. 30,000 s. 14,583 t. 36,166 f. 126,833	f. 75,000 s. 3,600			f. 33,341 s. 3,458						
July	f. 16,833 s. 4,541	f. 24.166 s. 3,708	missing			missing						
Aug.	f. 6,250	f. 65,541 s. 6,166	f. 14,666 s. 1,416			9,291						
Sept.	f. 30,000 s. 11,208 t. 1,833	1,291	4,291			4,791						
Oct.	7,708	2,041	8,150			5,375						
Nov.	f. 350,000 s. 8,958	583	5,291			6,291						
Dec.	4,875	f. 114,250 s. 25,333 t. 100,000 f. 12,265 f. 100,000	f. 36,950 s. 3,750			1,000						
1903		Dairy F										
Jan.	4,416	5,150	4,875	22,000	2,500	4,125	541	13,041				
Feb.	f. 17,458 s. 2,583	5,708	f. 13,416 s. 4,000	f. 59,875 s. 8,708	4,708	2,500	5,541	4,041				
Mar.	f. 32,958 s. 105,000 t. 1,708	f. 191,333 s. 11,250 t. 29,125 f. 7,416	4,166	4,750	1,916	6,291	7,583	f. 165,000 s. 21,875				
April		5,150	4,250	11,041	9,041	23,041	2,250	11,800				
May		7,733	2,562	8,291	2,416	2,166	2,000	7,916				
June		f. 11,333 s. 3,625	2,918	2,750	3,625	2,791	7,500		11,500 f. 10,958 s. 189,750		f. 534,500 s. 11,375	
July		2,791	4,291	f. 45,833 s. 7,083	1,958	5,458	7,833		t. 8,958 f. 29,625		t. 16,291(s) 12,958	
Aug.		7,166	7,208	13,083	f. 20,416 s. 4,125	f. 27,500 s. 1,458	5,333		s. 4,583 f. 5,041 s. 3,208 2,041 (s.)	f.13,708 s. 5,875	f. 10,708 s. 175,000 t. 7,075	
	Dairy H											
Sept.		3,166	2,041	4,833	1,916	9,166	4,708				9,875(s)	
Oct.	3,958	7,333	f. 10,583 s. 2,625	13,000	2,375	6,708	2,816		f. 416 s. 750	f. 2,458 s. 1,291	f. 1,291 s. 5,000	
Nov.	f. 10,500 s. 1,750	4,125	1.041	24,916	8,166	9,333	not made		f. 3,041 s. 1,541 1,833	583 2,000	1,566 1,750	3,041
Dec.	3,125	f. 17,625 s. 4,833	2,583	f. 25,125 s. 4,291	2,291	2,666	4,041		1,541	2,958	375	916

CHEMICAL REPORT.

	Dairy A		Dairy B		Dairy C			Dairy D			Dairy E			Dairy G					
	Milk		Milk		Milk		Cream	Milk		Cream	Milk		Cream	Milk				Cream	
														4 per cent.		5 per cent.		16 per cent.	20 per cent.
	Fat	Proteid	Fat	Proteid	Fat	Proteid	Fat	Fat	Proteid	Fat	Fat	Proteid	Fat	Fat	Proteid	Fat	Proteid	Fat	Fat
1900																			
Sept.	4.00	3.2			4.3	3.4													
Oct.	3.93	3.31			4.39	3.37													
Nov.	4.07	3.5			4.00	3.4													
Dec.	4.00	3.4	4.3	3.5	4.00	3.5													
1901																			
Jan.	3.95		4.30	3.5	4.0	3.5													
Feb.	4.04		4.04		4.38														
Mar.	4.73	4.1	3.65	3.5	4.21	3.7													
April	4.3	4.0	4.12	3.5	4.0	3.3													
May	4.2	3.9	4.5	3.6	4.4	3.8													
June	4.3	3.9	4.4	3.6	4.4	3.5													
July	4.1	3.5	4.1		4.4	3.5													
Aug.																			
Sept.																			
Oct.																			
Nov.	4.2	3.8	4.4		4.0	3.1													
Dec.	4.20	4.2	4.2		4.45														
1902																			
Jan.	4.7	3.6	3.6		4·7														
Feb.	4.2		3.6		4.4														
Mar.																			
April	4.4		4.5		4.5														
May																			
June	3.5		4.8		4.5					16.0									
July	3.6		4.8		4.0					16.0									
Aug.	4.5		4.6		4.4					20.0									
Sept.	4.1		4.4		4.4					16.0									
Oct.	4.5		3.6		4.3					16.5									
Nov.	4.5		4.4		4.4					f. 14.0 s. 16.0									
Dec.	4.9	3.955	4.9	4.059	4.2	3.50		4.8	3.866	16.20	4.8	3.5	16.1						
1903			Dairy F																
Jan.	4.4	3.605	f. 5.7 s. 4.95	3.15 3.50	4.2	3.625	18.9			18.9	4.5	3.87	f. 20.0 s. 17.55						
Feb.	4.5	3.57	5.2	4.085	4.5	3.482	16.03	5.5	3.975	16.2	4.0	3.85	19.64						
Mar.	f. 5.3 s. 4.8 t. 4.9 f. 4.5	3.464	f. 4.6 s. 4.6	3.276 3.465	f. 4.5 s.	3.325 3.5	18.33	5.4	3.884	16.044	4.2	3.605	16.8						
April	Withdrew		f. 4.1 s. 4.8	3.325 3.557	f. 4.15 s.	3.4 3.60	17.2	f. 5.7 s. 5.8 t. 5.0	3.8	16.84	4.3	3.605	16.84						
	Dairy H																		
May			f. 4.1 s. 4.3 t. 4.5	3.32 3.25 3.5	f. 3.8 s.	3.39 3.501	15.62	5.7	3.6	f. 13.44 s. 18.0	4.3	3.53	15.96						
June			f. 4.4 s. 4.5	3.425	4.2	3.425	19.00	f. 6.6 s. 6.4 t. 4.5	3.715 3.39	14.13	f. 5.0 s. 4.0	3.46				4.0 4.7(s)	3.5 3.76 (s)	19.48 22.47 (s) 20.19 (s)	
July			f. 4.2 s. 4.5	3.679 3.679	3.9	3.679	17.19	5.5	4.057	15.28	f. 5.1 s. 4.0	3.858 3.49				5.3	3.450	18.0	
Aug.			f. 4.3 s. 5.0	3.072	4.1	3.5728	16.608	f. 4.1 s. 5.4	3.37 3.679	16.526	f. 5.0 s. 4.5	3.572 3.5728		4.1	3.5728	5.2 4.9 4.8	3.608 3.357(s) 3.613(s)	19.482 17.19 (s) 16.10 (s)	
Sept.			4.9	3.644	4.3	3.5013	17.954	5.1	3.7514	16.426	3.5	3.537		4.0 4.1	3.572 3.572(s)	5.0 5.2	3.713 3.572(s)	17.145 17.145(s)	
Oct.	4.1	3.7514	4.5	3.787	4.2	3.8228	17.57	5.1	4.0724	f. 21.000 s. 19.72 t. 18.3	4.75	3.85		4.3 3.8	3.679 3.65 (s)	f. 4.2 s. 5.1	3.787 3.858	16.808	20.255
Nov.	f. 4.8 s. 4.5	3.929 3.644	4.8	4.10	4.0	3.679	18.35	5.1	4.0	15.28	4.5	3.608		3.7	3.572	f. 4.2 s. 4.2 t. 5.1	3.617 3.644	17.57	
Dec.	4.4	3.572	f. 4.3 s. 4.5	3.644 3.75	4.5	3.644	18.336	4.8	4.03	17.57				4.2	3.787	5.3	3.715	f. 18.718 s. 19.864 t. 18.33	f. 23.704 s. 21.39

was 350,000 per cc. and in five examinations the count was over 100,000.

Dairy B.—In twenty-five examinations of milk, the bacteria were above the standard of 10,000 on the first examination six times; on the second examination two times; on the third examination once; on the fourth examination twice, the dairy being dropped after this occurred the second time. The highest count ever recorded against this dairy was 126,833, and in five examinations, the count was over 100,000.

Dairy C.—In forty monthly examinations of the milk from this dairy the bacteria were above the standard, on the first examination eight times. The highest counts were 75,000, 72,000 and 36,950. In the five remaining instances in which they failed of the requirements, the count was between 10,000 and 15,000. In twelve monthly examinations of cream, the bacteria were above the standard of 25,000 three times, these counts being 45,833, 39,875 and 25,125.

Dairy D.—In fourteen monthly examinations of cream the bacteria were above the standard on the first examination twice, the counts being 33,341 and 27,500. In twelve examinations of milk, the bacteria were above the standard once, the count being 20,416.

Dairy E.—In twelve monthly examinations of milk, the bacteria were never above the standard. In six examinations of gravity cream, the bacteria were above the standard once, the number being 165,000. This dairy no longer produces cream.

Dairy F.—In three examinations of milk, made pending admission to certification, the bacteria overran our standard each time, once going above 100,000. In sixteen examinations of milk, made since admission, it has overrun the standard twice, the highest count being 29,625. In three examinations of cream, made pending admission, the bacteria were above the standard, once running as high as 534,500. In eight examinations since, there have been no failures, the lowest count recorded being 575.

Dairy G.—In twelve examinations of milk, the bacterial count was too high, on the first examination twice, and on the second examination once. A total of three failures. The highest count, and the only one above 100,000, was 191,333.

Dairy H.—In three examinations there has been one failure with a count of 10,500.

These results seem to us to be very interesting. Eliminating

Dairies A and B, in a total of 146 examinations of milk and cream, from all dairies, there have been but twenty-seven failures; that is, twenty-seven instances in which the count overran 10,000 bacteria per cc., and in only four instances did the count exceed 100,000. In two instances the count was above 50,000 and below 100,000, the majority of all failures being under 25,000.

A feature of interest which has impressed itself upon your Commission, is the fact that amongst the dairies now under our certification we are almost always able to trace a high bacterial content to some specific cause.

This well demonstrates that proper attention to details brings it within the possibility of any well-equipped modern dairy to produce a milk of low bacterial content.

The results of the chemical examinations have been equally satisfactory. In one instance only have we found a preservative in the milk. This was formalin, which our chemist was also able to recover from the gauze which had been used in straining the milk.

Eliminating Dairies A and B, and taking up Dairy C, the fat percentage of the milk in thirty-six examinations has been too high but once and never too low, the lowest percentage being 3.8 and the highest 4.7 per cent., the average being 4.25 per cent. The proteid percentage has been accurately recorded during only a portion of the time. In twenty-seven examinations it has always come within our present requirement (a variation between 3 and 4 per cent.), the highest being 3.82 and the lowest 3.1, the average being 3.518.

The cream from Dairy C (16 per cent. cream), in twelve examinations, has been above our top limit of 18 per cent. on four occasions, the highest being 19 per cent. It has never fallen below our minimum requirement of 14 per cent., the lowest having been 15.62 per cent., the average being 17.5 per cent.

Dairy D.—The fat percentage of the milk (a 5 per cent. milk) in seventeen examinations has been above the top limit of 5.5 per cent. five times. It has been below the minimum allowance of 4.5 per cent. once. The highest percentage recorded was 6.6 per cent., the lowest 4.1 per cent, the average being 5.32 per cent.

The proteid percentage in fourteen examinations of the milk has been above the top limit of 4 per cent. three times, and has never been below the lower limit of 3 per cent., the highest percentage recorded having been 4.0724, the lowest 3.27, the average being 3.8 per cent. In twenty-two examinations of the cream (15 per cent.) the fat content has been above our present standard four times. It has been below the lower limit once, the highest percentage recorded having been 21 per cent. and the lowest 14 per cent., the average being 16.6 per cent.

Dairy E.—In fifteen examinations of the milk (4 per cent.) the fat content was above the top limit of 4.5 five times, the highest being 5.1 per cent. It was never below the minimum of 3.5, the lowest percentage recorded having been 3.5 per cent., the average being 4.3 per cent. The proteid percentage in thirteen examinations was within the allowed variation always, the highest percentage recorded having been 3.858, and the lowest 3.46 per cent., the average being 3.6 per cent. In six examinations of gravity cream (16 per cent.), the fat content was above the top limit twice, but never below the minimum, the highest percentage recorded having been 20 per cent., and the lowest 15.96 per cent., the average being 17.1 per cent.

Dairy F.—In twenty-one examinations of the 5 per cent. milk the fat percentage was above the top limit once, and below the minimum variation seven times, the highest percentage recorded having been 5.7 per cent. and the lowest 4.1 per cent. The average being 4.6 per cent. In nineteen proteid examinations, this milk exceeded our present standard once. It has never been below the lower limit. The highest percentage recorded was 4.1 per cent., and the lowest 3.072 per cent., the average being 3.5 per cent.

Dairy G.—In eight examinations of 4 per cent. fat milk the fat content was above the top limit but once, and has not fallen below the minimum variation, the highest percentage recorded having been 4.6 per cent. and the lowest 3.7 per cent., the average being 4.1 per cent.

In eight proteid examinations, the 4 per cent. fat milk did not exceed or fall short of the limitations, the highest percentage recorded having been 3.787 per cent., and the lowest 3.572 per cent., the average being 3.648 per cent.

In fourteen examinations of 5 per cent. fat milk, the fat content did not exceed the top limit. It fell short of the minimum four times, the highest percentage recorded having been 5.3 per cent., and the lowest 4 per cent., the average being 4.8 per cent. In thirteen proteid examinations, the 5 per cent. fat milk was within the limits of variation, the highest percentage recorded having been 3.858 per cent. and the lowest 3.5 per cent., the average being 3.644 per cent.

In fourteen examinations of 16 per cent. cream from the above dairy, the fat content exceeded the top limit of variation seven times. It did not fall short of the minimum variation. The highest percentage recorded was 22.47 per cent., and the lowest 16.10 per cent., the average being 18.46 per cent.

In three examinations of 20 per cent. cream from the above dairy, the fat content exceeded the top limit of variation once, but did not fall short of the minimum variation. The highest percentage recorded was 23.704 per cent., and the lowest 20.255 per cent., the average being 21.783 per cent.

Dairy H.—In four examinations of the 4 per cent. milk, the fat percentage was above the top limit once, and has not fallen below the minimum of variation, the highest percentage recorded, having been 4.8 per cent. and the lowest 4.1 per cent., the average being 4.4 per cent.

In four examinations, the proteids were within the limits of variation, the average being 3.679.

In summing up the results of the examinations of all the dairies, it is seen that in 110 examinations of the 4 per cent. fat milk, the average fat content has been 4.29 per cent., and in 52 examinations of 5 per cent. fat milk, the average fat content has been 4.89 per cent., whilst the average proteid content in 121 examinations of 4 and 5 per cent. fat milks, has been 3.6181 per cent.

In a total of fifty-six examinations of 16 per cent. cream, the average fat content has been 17.264 per cent.

These results emphasize several facts: First, that it is possible to produce milk and cream having a fairly constant fat content; second, that the proteid content of a large number of standard milks, determined by the Kjeldahl method and examined at irregular intervals, at all seasons of the year, over a long period of time, is very close to the present accepted average of 3.5 per cent., and, third, that the variation of the fat content is much greater than that of the proteid, and that both vary sufficiently to produce decided daily variations in the percentages of our milk modifications.

J. P. Crozer Griffith, M.D., *Chairman.*
D. J. Milton Miller, M.D.
Alfred Hand, Jr., M.D.
Thompson S. Westcott, M.D.
Samuel McC. Hamill, M.D., *Secretary.*

THE PHILADELPHIA PEDIATRIC SOCIETY.

Stated Meeting, Tuesday, February 9, 1904.

JOHN H. JOPSON, M.D., PRESIDENT.

INFANTILE SCURVY—REPORT OF A CASE.

DR. THEODORE LE BOUTILLIER reported a case of scurvy in a white child, aged eight and a half months, three other children of whose parents had died before the age of three months, of intestinal diseases. The parents have two healthy children living. The family history is otherwise negative.

This child was nursed for one month, and received barley and oatmeal-water for six weeks. After this, it was fed on undiluted milk for six weeks. This diet produced an acute gastro-enteritis. From the age of four months until the time when it was first seen by Dr. Le Boutillier, the infant had had no milk; only albumin-water and brandy. She was then brought to him for treatment on account of fretfulness and crying whenever moved; and also for edema of the hands, feet, and legs, which had been noticed for two weeks. There had been no vomiting and the bowel movements had been normal.

Examination showed marked emaciation. The child weighed 9 pounds 10 ounces. Her gums were swollen, red and spongy; but not bleeding. There were slight cachectic manifestations. The backs of the hands were quite edematous from the wrists to the fingers; also the lower third of the legs and the feet, especially about the ankles. The child would emit a sharp cry whenever an extremity was moved, and often when merely touched. She was put on orange-juice, beef-juice, and whey; and at the end of three days the edema had entirely disappeared. Placed on a milk-mixture, by the seventh day she had increased 1 pound in weight; and there was no fretfulness nor crying when moved.

This case seemed interesting to the speaker because of its having been sent to him by the family physician, who had failed to make a diagnosis; and also on account of the interest in the disease manifested in France during the year past. He therefore thought it worth while to bring the case to the attention of the Society.

Dr. J. T. Rugh said that such cases are important for the reason that those that work in children's clinics not infrequently see more or less pronounced cases of this character, which have been unrecognized by the family physician. He mentioned, in particular, 1 case in which the child had marked tenderness, but without any definite signs of scurvy; nor was there any evidence of rickets. The child had been badly fed, chiefly in a lack of fats. Treatment for scurvy caused rapid improvement.

Dr. James K. Young spoke of the importance of subperiosteal hemorrhage from the surgical standpoint. He mentioned having seen a case in which there was subperiosteal hemorrhage on each side along the tibia. A New York surgeon had diagnosed the condition sarcoma; had incised one swelling; and, from the microscopic appearance, had insisted that his diagnosis had been correct. A general practitioner in Philadelphia, however, had considered the condition to be scurvy and treated it as such, and the child had rapidly recovered. Dr. Young referred to the importance of looking for swollen gums and other signs of scurvy in cases presenting symptoms of sarcoma of the tibia.

Dr. J. P. Crozer Griffith said that he had not understood what diet the child had been put on, and asked for information concerning this point.

Dr. Le Boutillier replied that for two months previous to the appearance of the symptoms of scurvy the child had had only oatmeal-water, barley-water and albumin-water.

Dr. Griffith said that it is an interesting fact that in France infantile scurvy is considered to be quite rare, and cases are reported chiefly on that account. The same is true of Italy and of Switzerland. He believes that this is because the general practitioners, and even the pediatric specialists, have overlooked the disease, the chief reason being that they have looked for perfectly typical symptoms; while in a large proportion of these cases of scurvy the symptoms are not typical. Dr. Griffith has himself had a fairly large experience with cases of that disease, having seen 28. Most of these were seen in consultation, and most had previously been unrecognized. Some of the cases were his own, and had not been recognized so early as they should have been. One, for example, was a case of persistent renal hemorrhage that had yielded to no treatment, until it was recognized as scurvy and treated with orange-juice. Dr. Griffith believes that every child under two years of age that has signs likely to be considered those of rheumatism should first be suspected of having scurvy. As to the influence of diet, and particularly of sterilized milk, the speaker said that the investigations of the Committee of the American Pediatric Society have shown that sterilized milk cannot be accused of being the essentially determining cause of scurvy. While it seems active in producing the condition, various kinds of food, and especially the carbohydrate food, certainly cause it; and he does not believe it to be due to any one definite kind of food. He thinks that it is due rather to the lack of some principle or principles in the food, and finds it impossible to state whether one substance or many are wanting. It is possible that the actual cause of the condition is an infection. This question, also, cannot be settled.

Dr. John H. Jopson referred to the fact that Dr. Young's case resembling sarcoma is not an isolated one, other similar cases having been reported. He mentioned 1 case seen by himself that had at first simulated hip-disease; and another that presented a condition thought to be a sprain of the ankle, for which it had been treated for some time. He diagnosed both these cases as scurvy, and both recovered on antiscorbutic treatment. These cases have impressed upon him the importance to the surgeon, as well as to the physician, of recognizing this disease promptly.

Dr. Le Boutillier said that the point upon which he wished especially to insist was that there seem to be a great many cases properly belonging under the heading of scurvy that are not usually considered to be such. There may be only marked swelling of the gums or tenderness along the tibia, or perhaps intense general fretfulness. He has repeatedly seen such patients recover with practically no change in management except the use of orange-juice, and he believes that theirs are frequently mild cases of scurvy. With reference to Dr. Young's remarks concerning subperiosteal hemorrhage, Dr. Le Boutillier said that there had been no hemorrhage in the case of his patient.

AN INSTRUMENT FOR STRETCHING CLUB FOOT.

Dr. G. G. Davis exhibited a new club-foot stretcher for inveterate cases of that deformity. This instrument was first exhibited before the American Orthopedic Association at Washington. It consists of two strong steel bars, about a yard long, hinged at one end by means of a bolt. On the under bar is an adjustable foot-rest with two plates, for the heel and the front part of the foot, respectively, to rest upon. On the upper bar is placed a long pad, to protect the skin from the pressure of the steel. In using the instrument, the foot is placed with the heel and front part resting upon the plates; the upper bar is then brought down upon the dorsum of the foot, which is thus forced downward. The ligaments of the tarsus and the metatarsus may be stretched, or sometimes torn; and the tarsal bones pushed downward toward the sole.

Dr. Davis said that although the use of such a forcible instrument may seem brutal, he had been forced to utilize it through the lack of efficacy of milder means. In some cases manual stretching and putting the foot in plaster, after the manner of Wolf, of Berlin, is sufficient; in others, stretching the foot over a block, as did Koenig, answers the purpose. In obstinate cases, however, the amount of "mauling" necessary to straighten the foot on Koenig's block is greater than Dr. Davis thinks advisable. The use of wrenches like those of Thomas and McCurdy are of service, especially when the heel is to be brought down, but employing them to unfold a severe varus is liable to break the bones of the leg or injure the ankle. In such cases, by means of Dr. Davis' instrument, the foot may be straightened without subjecting the ankle or the leg to the slightest danger of injury.

The patient shown is five years old. At the age of two years, he had both astragoli removed by another surgeon. The deformity that remained after this operation was well shown by the casts made previously to using Dr. Davis' instrument. In these, while the soles are nearly flat on the ground, the anterior portion of each foot is pointed markedly inward; and the cuboid bone forms a marked hump on the dorsum. By one application of the stretcher, this deformity was considerably reduced, as could be seen by examining the patient; and Dr. Davis thinks that another application of the instrument will probably straighten the feet entirely. He believes that too much traumatism is inflicted by straightening a severe case of club foot entirely at one sitting; so he prefers two or three stretchings (or crushings), at intervals of two weeks. After being stretched, the foot is put up in plaster and held in its corrected position until the plaster sets.

Dr. Davis has never had any sloughing to follow the use of the implement; but in 1 case the skin of the sole was so short that a tear of about three-quarters of an inch resulted, necessitating two stitches. Primary union occurred without trouble. For still more severe cases, Dr. Davis has used the wedge-shaped resection.

Dr. Young said that he had been much pleased with Dr. Davis' instrument. He thought that Dr. Davis was, in many respects, to be congratulated upon the progress made in the case that he had exhibited. Dr. Young has employed several club-foot stretchers, among which are the Thomas and the Myers. In size and force, the stretcher of Dr. Davis is intermediate between these and the machine of Phelps, which may more properly be called a crusher; as it is capable of applying as much as 2,000 pounds of pressure.

In inveterate cases, however, Dr. Young prefers astragalectomy to other procedures; but he has never carried it out so early as was done in this case. He always waits until the patient is at least seven years old, and he has successfully performed the operation on patients as old as thirty-one years. He particularly prefers it in cases of double deformity. It is important, however, to remember that neither this operation nor any other is likely to be successful, unless careful and prolonged after-treatment is carried out. The child should not be dismissed with a brace soon after the operation, but should usually be kept under observation for about a year.

Only one of the cases treated by Dr. Young with astragalectomy failed; and in this case he subsequently secured a successful result by performing a wedge-shaped tarsectomy. Of late, however, he has not resorted to the use of club-foot stretchers, having had success with manual pressure over a block. He uses the half-round block, and not that of pyramidal shape. Dr. Young then referred to the importance, in tendon-cutting, of severing the posterior tibial tendon. This tendon is often neglected, but he considers it essential to recognize the fact that cutting it will often overcome all the difficulty. On account of the extent of its attachments, this tendon is frequently more important than all the others put together.

Dr. Rugh thought that Dr. Davis' instrument might more properly be called an osteoclast than a stretcher; as it is constructed upon the same general priniciple as is Grattan's osteoclast, which can be used for club-foot. Dr. Davis' instrument, however, differs from Grattan's in the fact that screw-force is not used in it as in Grattan's, and in Dr. Davis' the force can be better regulated. Dr. Rugh considers it an excellent instrument, but he agrees with Dr. Young, however, in preferring operative procedures, and believes that a wedge-shaped resection sometimes does good. In some cases, however, the articular surface of the astragalus has become so altered that it cannot well be forced back into its normal position; and in such conditions astragalectomy is the only satisfactory operation. Dr. Rugh, also, prefers to operate during the later years of childhood; and he, likewise, considers the after-treatment of great importance.

Dr. Davis said that he had little to add to what he had already stated. He feels that in cases of this kind the foot must be straightened sufficiently to allow the heel to go well down in the shoe. If the parents cannot do this readily, the use of apparatus is unsatisfactory. If straightening cannot be effected with mild measures, one must use force, or else send the patient away with an uncorrected deformity. Dr. Davis thinks it important to correct the deformity as early as possible. In some of his cases he has exhausted all other means before coming to the measure under discussion. He does not deny the value of astragalectomy at times, particularly in neglected cases. He believes that, when operating upon the astragalus, it is desirable not only to go across the inner arch of the foot, but also to carry one's work across the outer arch; otherwise, the intact outer arch will cause the deformity to persist, as was shown in the patient exhibited by the speaker.

PORTABLE FRAME FOR THE APPLICATION OF PLASTER JACKETS.

Dr. James K. Young exhibited a portable frame for the application of plaster bandages, manufactured by Messrs. Bernstein & Co. under his direction. He said that after a two years' experience he had found it entirely satisfactory. There are two principal methods of extension for the application of plaster jackets, the vertical suspension by means of a Sayre extension, and a simple modification of the hammock suspension. By stretching muslin upon a gas-pipe frame the hammock suspension may be imitated and the application of the plaster is made with great ease to the surgeon and comfort to the patient. This frame consists of three pieces of gaspipe and a rod, the whole being fastened together by two screws and one pin. To the rod is attached a ratchet by means of which the muslin may be thoroughly stretched.

The patient is placed upon the muslin, face downward, a strip of tin is placed beneath the muslin on the outside, and tin and muslin are incorporated in the dressing. After the plaster has hardened the ends of the muslin may be cut off, and the plaster cast may be divided upon the tin with a sharp knife without any injury to the patient. The weight of the body upon the muslin causes it to sag slightly and in this way the spine is straightened.

This frame is useful for small children; but for adults there are not the same objections to suspension, and it may frequently be employed to advantage.

Dr. E. E. Graham asked whether the apparatus could be made longer or shorter, according to the size of the patient.

Dr. Young replied that the length of the apparatus cannot be changed. It is made of a size suitable for the average adult-patient, if the lower limbs be placed on a table or other support. The apparatus, as it is, will do for smaller persons; and, by using a double layer of muslin, it can be made so as to support even very heavy patients.

Dr. Rugh thought the apparatus to be convenient for anyone with a great deal of such work to do; for all ordinary purposes, however, he considered suspension between two tables to be sufficient, the shoulders being placed on one table and the pelvis on the other. This gives enough corrective force, and the patient is comfortable. Dr. Rugh said that he could imagine cases in which unusual tenderness or, perhaps, timidity might necessitate the use of some such support as that afforded by Dr. Young's apparatus, which, in such instances, would be very useful.

Dr. Jopson exhibited an apparatus devised by Dr. Tunstall Taylor, of Baltimore, and called by him the recumbent kyphotone. This apparatus has been used by Dr. Jopson with great satisfaction for about a year. It is more especially adapted for small children. It often gradually corrects the deformity, and gradual correction is what is desired. Forcible and immediate correction has already become obsolete.

Dr. Young agreed with Dr. Jopson as to the great inadvisability of forcible overcorrection of the deformity, and said that at present the general custom of the profession undoubtedly, is to attempt to correct the deformity gradually. His apparatus permits of this gradual correction, through the sagging of the muslin.

He has used Whitman's frame with some success, but has had one curious and unpleasant result from using it:—When a child that had been on the frame for three months and had had its deformity entirely corrected by it was allowed to be up and to attempt to walk about, it manifested a marked tendency to fall backward. This was undoubtedly due to its having retained the position for so long, and constitutes one danger from the long-continued use of the frame.

CASE OF INTESTINAL ADHESION OF TRAUMATIC ORIGIN.

Doctors S. McC. Hamill and F. T. Stewart showed a specimen from the case. The patient had been presented at a previous meeting of the Society as a case of cystic ectopic kidney. Three years ago, he had fallen on his right side. Immediately following the fall he had had violent abdominal pain, attended by fever and vomiting, which lasted for several days. Since this time, he had had recurring attacks of pain in the right upper abdominal quadrant, which always began suddenly, following active exercise and were very severe in character, attended by chills and fever, sometimes constipation and sometimes diarrhea. The attacks varied in duration from a few hours to several days. The last attack, in which he was admitted to the Polyclinic Hospital, had existed for a period of three weeks and was less severe in character than the earlier attacks. He gave no history of jaundice and had no urinary symptoms.

In the right upper abdominal quadrant there was present a mass, about the size and very much the shape of an enlarged kidney. The anterior surface of this mass was closely adherent to the liver and moved with respiration. The mass varied in size from time to time, but, on all occasions, except one, retained its firmness and kidney shape. There was very slight tenderness on pressure and pain was never complained of.

Prior to the time the patient was shown to the Society, there was nothing abnormal noted in the stools. Shortly after this time, he began to pass blood in the stools. The blood was dark in color and mixed with the fecal matter. This rapidly increased in quantity and continued up to the time of the operation. Prior to the appearance of the intestinal hemorrhages, the condition was diagnosed as an enlarged movable kidney, the sudden attacks of pain and the variation in size being accounted for by the occurrence of a kink in the ureter. The hemorrhages made it clear that some intestinal lesion existed, the nature of which was not definitely determined. Sarcoma of the intestine was suggested. The operation showed a mass of very firm adhesions between the liver, the abdominal wall, the ascending colon and the beginning of the transverse colon. The transverse colon looped downward and became tightly adherent to the ascending colon immediately above the cecum. This adhesion gave the appearance of, and was mistaken for, a stricture of the colon.

In an attempt to separate the adhesions surrounding this supposed stricture, the two portions of the bowel were separated and it was found that there had been a point of communication between them. These openings were thought to have been the lumen of the bowel. In the portions of the ascending and transverse colons surrounding the points of separation there was extensive ulceration in the mucous membrane, which had evidently been responsible for the bleeding. Several inches of gut around the points of perforation were removed and what was thought to have been an end to end anastomosis was done. The patient was tremendously shocked from the operation and never reacted, death occurring within thirty-six hours. An autopsy was not permitted, but a portion of the intestine was removed through the original wound. This showed that a lateral anastomosis had been done and that there was a loop of colon formed by the portions of the ascending and transverse colons above the point of anastomosis. The intestinal walls were thickened. The mass felt during life was evidently due to this loop of gut and the adhesions described.

CASE OF INTUSSUSCEPTION.

Dr. Edwin E. Graham reported the case, that of a child thirteen months old. The patient was seen for the first time on February 6th, at which time she had been ill forty-eight hours, having exhibited abdominal pain, together with persistent and severe vomiting and constipation. A mass in the descending colon could be felt. An injection of salt-solution was made, the bag of the fountain-syringe being gradually raised from eighteen to twenty-four inches. At the end of about ten minutes, examination showed the mass to be still present in the colon. The bag was then gradually raised to a height of six feet, the child being kept inverted; and this procedure was continued for about twelve minutes. At the end of this time, the intussusception could not be found; but no gas or solid material escaped from the bowel, and there was no noteworthy change in the child's condition. After a delay of about four hours, with the hope that the intussusception had been reduced, it was decided to operate; but the parents would not consent to this procedure until the next afternoon. Ileocecal intussusception was found, extending nearly to the transverse colon. This was readily reduced, except for the last two or three inches. Adhesions and peritonitis were absent. After the operation the temperature rapidly rose to 107°F.; and the pulse increased to 180 before the child's death, which took place two hours later.

DR. GRAHAM discussed the question whether there are any satisfactory indications, after using injections, that this procedure has been effectual in reducing the intussusception; whether, in such circumstances, one should expect a rapid improvement in the condition of the patient, with the passage of gas from the bowel or the escape of fecal matter, and a reduction in the abdominal distention; and what means there are for deciding whether one should operate immediately after using the injection or is justified in delaying for a time. He believes that in his case the operation itself produced no noteworthy shock, but that the child's illness merely followed the usual course in cases not operated upon.

DR. D. J. MILTON MILLER said that to his mind this case emphasizes the fact that the sooner it is generally recognized that intussusception is a surgical condition requiring that the patient be at once turned over to the surgeon, the better it will be for all concerned. The circumstances are much the same as those in appendicitis, in regard to the difficulty in deciding which patients may get better with milder measures and which cases actually demand immediate surgical intervention. The operation in itself is not dangerous, and it is only by operating that one can find out whether the intussusception has been reduced. When one depends upon injections into the bowel, one can never tell—except by risking a long and dangerous period of subsequent observation—whether the intussusception has actually been reduced or not.

DR. S. McC. HAMILL asked whether or not the experience of any of the members of the Society had led them to consider intussusception less common now than formerly. His own experience had been that, whereas he now sees many more children than he used to see, he sees decidedly fewer cases of intussusception. He thought it probable that improved conditions of diet or other preventive measures had resulted in making intussusception less common.

Dr. Jopson agreed with Dr. Miller in believing that the condition is constantly becoming more clearly recognized to be surgical. In connection with this fact, the speaker mentioned that most of the cases with which he is familiar have been seen by surgeons very late, when it was impossible to expect satisfactory results from surgical intervention. As to Dr. Graham's question concerning the means of determining whether high enemata have reduced the intussusception, Dr. Jopson said that he does not believe it possible to reach any decision regarding this point—except, perhaps, by waiting for a number of hours, when it may be decided that the symptoms have subsided and that the intussusception has been relieved. This, however, involves a long and often extremely dangerous delay.

Dr. Graham, in closing, referred to the fact that from time to time one sees reports of cures of intussusception through injecting liquid or air into the bowel. The question in his mind was: What symptoms would justify one in deciding to delay operation for a few hours, after having used injections with some signs of success?

Febrile Whooping-Cough. — Quotidian Intermittent Type.—Cesaroni (*Riforma medica,* March 14, 1903) reports a case of whooping-cough which was accompanied by a well-marked febrile movement. This disease is not always febrile, and nearly every author speaks of a slight rise of temperature during the initial stages of the disease. During the spasmodic stage, however, the principal authorities on the subject declare that no fever occurs, or that when it does occur, it indicates the presence of some complication. A few cases are cited in literature in which fever was observed during the convulsive stage. Alfaro describes several varieties of fever which may occur in this stage of whooping-cough: (1) Sudden and short accesses of fever, occurring at irregular intervals, and sometimes preceded by chills. The temperature may rise to 104°F. and the attack may be single and terminate with perspiration, or it may be repeated at intervals of a number of days. (2) Protracted remittent fever lasting during the entire convulsive stage or during the greater part of it. (3) Protracted intermittent fever, usually quotidian, sometimes tertian or irregular, with or without chills. (4) Fever with a morning rise and evening remissions.—*Medical Record.*

Current Literature.

PATHOLOGY.

Giarth, D. J.: Child with Eight Fingers on One Hand. (*American Medicine,* September 19, 1903, p. 463.)

The first-born child of a healthy young mother was found to have eight well-developed fingers but no thumb on the right hand. The hand was flexed on the wrist and forearm and turned so as to face posteriorly, and there was a dislocation of the radius and ulna at the elbow. The baby was otherwise normal and weighed 7 pounds. At sixteen months the child had good use of the hand, could flex the forearm to a right angle. Recently the writer removed three of the fingers, together with one metacarpal bone, leaving a well-developed hand without stump or thumb.

Dunn, Charles Hunter: Observations on the Iodin Reaction in the Blood in Children. (*Boston Medical and Surgical Journal,* November 5, 1903, p. 511.)

The technique employed was described by Drs. Richard C. Cabot and Edwin E. Locke in an article in the *Journal of Medical Research,* 1902, Vol. VII., No. 1, and further described by Dr. Locke in the *Boston Medical and Surgical Journal* of September 11, 1902. A study of the reaction was made in the cases of children suffering from lobar pneumonia, bronchopneumonia, influenza pneumonia, typhoid, acute miliary tuberculosis, influenza, nephritis, functional indigestion, chronic valvular heart disease, and several other diseases. The results were in general confirmatory of the theory that the iodin reaction is a measure of the degree of toxemia. The single observation in a case of diphtheria gave the most intense reaction.

A summary of results is given as follows:—(1) The reaction is always present, usually of average and often of marked intensity, a high percentage of cells being affected in the following conditions: Lobar pneumonia, bronchopneumonia, cerebrospinal meningitis, influenza, empyema, suppuration (nontubercular), and was found present in single cases of appendicitis, diphtheria and starvation.

(2) The reaction is usually present but may be absent in cases of typhoid fever, and miliary tuberculosis.

(3) The reaction may be absent or present in anemia.

(4) The reaction is usually absent but may be present in nephritis, cardiac valvular disease and tuberculosis.

(5) The reaction is absent in pleurisy with effusion, functional indigestion, rachitis, articular rheumatism, congenital cardiac disease, chorea, infantile atrophy and was found absent in single cases of bronchitis, eczema, purpura, urticaria and scorbutus.

Caccia, Giuseppe: A Case of Suppurative Streptococcus Infection of the Thyroid Gland Secondary to Vaccination. (*Riv. di Clin. Pediatr.*, 1903, Vol. i., No. 9, p. 599.)

A child of about two years of age was vaccinated for the first time eighteen days before the present illness. The reaction was intense. Four days after the vaccination, an evening rise of temperature began to appear, and since then the fever continued with an irregular course. Eczema appeared on the right cheek a few days later and on the fifteenth day the parents noticed the swelling in the neck. The neck was held in extension, and the swollen part was very painful, while the act of swallowing was accompanied by pain. The tumefaction corresponded in outline to that of the thyroid gland. Two days later, fluctuation appeared in it, and on incision a quantity of yellow pus issued. The child made a good recovery. The diagnosis was acute suppurative thyroiditis due to streptococcus infection, introduced with the vaccin. Cultures of this germ were obtained from the pus, and, injected into animals, gave rise to similar infections.

Carini, Antonio: A Tumor Resembling a Caudal Appendage. A Rare Anomaly in a Child. (*Archiv. di Patologia e Clin. Inf.*, Vol., ii., No. 5-7.)

The author describes the case of a child thirteen days old, who was brought to the clinic on account of a coccygeal tumor resembling in shape a caudal appendage. The tumor was 8 cm. long, and 5 cm. wide at its base or widest part. This caudal appendage was implanted between the last sacral vertebræ and the coccyx, slightly to the left of the median line. The anus was pervious, in spite of the fact that the tumor covered it partly. The tumor was softer at the apex and at the base than in its middle portion, and at the tip ended in a cyst which contained some transparent fluid. In the centre of the tumor there was a fibro-cartilaginous cord which passed through it and seemed to be connected to the last sacral vertebræ. When the child was irritated or when it cried. the tail-like appendage was seen to move in all directions in a series of motions which resembled exactly those of the tail of an animal. The tumor was removed completely and the child made a good recovery, with perfect disappearance of all traces of the deformity except a small scar.

Hoche, L.: Cirrhosis of the Liver in Children. (*Arch. de Méd. des Enf.*, November, 1903, p. 641.)

The author gives the histories and pathological findings in 11 cases of cirrhosis of the liver that were found among 900 autopsies on children under twelve years of age. The percentage is larger than that found by most observers. Infantile hepatic cirrhosis is rare, because most of the causes tending to produce it, such as chronic intoxications, infections, vascular stases, etc., are not met with until later life.

The ages and causes of the author's cases are as follows:—

CASE I.—Alcoholic cirrhosis, seven years.

CASE II.—Toxic cirrhosis of intestinal origin, twelve years.

CASE III.—Cirrhosis after scarlet fever (infectious), four and one-half years.

CASE IV.—Cirrhosis after prolonged suppuration, ten years.

CASES V. to IX.—Syphilitic cirrhosis. Ages varying from fifteen days to five months.

CASE X.—Cirrhosis of infectious origin, three weeks.

CASE XI.—Cardiac cirrhosis, ten years.

From these cases he forms two groups—congenital hepatic cirrhosis and acquired hepatic cirrhosis.

The congenital group embraces the syphilitic cases. Here the sclerosis is diffuse and is developed during intrauterine life. All the elements of the gland are involved. In 3 of his cases there was an obliterating endocapillaritis. In 2 cases he found interstitial nodules which were true miliary gummata.

In the acquired form the histological findings vary as to the cause, intensity of its action, etc. As a result, the cirrhosis was more or less diffuse, or localized, portal or venous, and associated with more or less severe degeneration of the cellular elements.

Only rarely was the condition of the liver recognized during life. The symptoms of hepatic insufficiency in children are indefinite and are completely masked by convulsions or coma.

The most significant lesion in all these cases was the atrophy or degeneration of the hepatic cells. The author believes that many cases do not end fatally but persist in a light degree and develop later into certain forms of cirrhosis during adult life. In these cases the liver is an organ of feeble resistance and a slight infection or intoxication will produce serious results.

MEDICINE.

Lorand, Arnold: Alimentary Glycosuria in the Children of Diabetic Persons. (*The Practitioner*, October, 1903, p. 522.)

The writer, as a result of giving test meals containing starch or various forms of sugar to the children of diabetics and then testing the urine, comes to the conclusion that in a majority of cases such children have inherited a certain defective power of dealing with sugar. Apparently, the ability to assimilate carbohydrates is diminished. Obesity and acne are frequently present, and precocious puberty is often observed. Diabetes may not develop, and much can be done to prevent it.

Sweets and starchy food should be reduced to a minimum, if meat is a main article of the diet; and should be partaken of only moderately even if meat is not eaten. Such children should not embrace callings that require great intellectual or emotional strains (physicians, lawyers, stock-brokers), outdoor sports should be indulged in freely and alkalin mineral waters used constantly.

Kimball, Reuel B.: Gonorrhea in Infants, with a Report of Eight Cases of Pyemia. (*Medical Record*, November 14, 1903, p. 761.)

The author says that gonorrhea has been raised, as a medical term, from the title of a local inflammation of a mucous membrane to the dignity of a systemic infection. The proneness of the gonococcus to produce a purulent inflammation in parts remote from the urethra has been underestimated.

Infants are remarkably predisposed to infection with the gonococcus; in girls inversely with the age, very young infants being more liable. Boys, however, have also a great susceptibility. As a consequence specific vulvovaginitis is common in institutions, and the infection tends to spread and to attack practically all the females; and, unless great precautions are taken, some of the males.

Among 600 admissions to the public wards of the Babies' Hospital there developed 70 cases of vulvovaginitis, and 10 cases of arthritis, due to the gonococcus. Only 1 case of ophthalmia developed in the hospital; but a large proportion of the vaginitis cases were infected there: possibly one-tenth of the entire number were admitted with the disease, and in every instance became the source of a small epidemic. At present a smear is taken from the vaginal secretion of every girl admitted, and microscopically examined before allowing her to be received into the wards. Only complete isolation can prevent the spread of the disease.

Ten days is the ordinary duration of gonorrheal vulvovaginitis, under treatment, in children less than one year old; in older chil-lren the disease is less amenable. The most satisfactory douche s a solution of protargal, from 2 to 5 per cent.

Among the cases of multiple arthritis or pyemia 8 were worthy of special comment, and their records, with the microscopical examination of the pus from the joints in all cases and necropsy reports in 3 cases, are given in full. All were infants under three months, seven males and one female. In 2 cases only one joint, the knee, was involved; in 6 there was a purulent polyarthritis, periarthritis and myositis, the disease being apparently a general pyemia. In 2 cases the temporomaxillary joints and in 3 cases the toe or finger joints were involved. The ankles and wrists were favorite sites. The treatment in every case was arthrotomy or aspiration, and wet dressings. The rapid healing of the incised joints was remarkable.

In none of these cases was there any urethritis, vaginitis, or conjunctivitis, with the exception of an ophthalmia in one instance, which developed after the joint involvement. The mucous membranes of the eye, urethra, and vagina were apparently normal. There was no history obtained of gonorrhea in the parent, nor of any gonorrheal manifestation in the child.

The remarkable feature of this series of cases is that there are here presented 8 cases of gonorrheal pyemia without any perceptible involvement of a mucous membrane to afford a point of entrance for the organism to the general circulation. Reviewing the possible portals of entry to the body, the skin and umbilicus can be excluded, as there was no lesion of surface epithelium or sign of cord infection in any case.

The organism isolated from the abscesses and joints during life and from these autopsy cases was undoubtedly the gonococcus. Every possible effort was made and every control used to establish this fact. Both the smears and the cultures from the pus were finally sent to the Johns Hopkins Pathological Laboratory and the diagnosis confirmed by Prof W. H. Welch.

Rogers, Albert E.: Treatment of Cervical Adenitis Due to Tonsillar Infection. (*Medical Record,* November 28, 1903, p. 853.)

For acute cases the author makes applications of 5 per cent. aqueous solution of iodin to the crypts of the tonsils. If ulcerative, the diseased tonsillar tissue is removed to below the floor of the ulcer and a strong antiseptic applied to the cut surface.

In chronic cervical lymphadenitis Goodale injects 10 per cent. aqueous iodin into the tonsillar crypts, using a hypodermatic syringe; the injections are repeated every third or fourth day. In most cases there was marked reduction of the lymph nodular swelling. Rogers is more energetic, and in all cases where the lymph nodes have not already broken down, extirpates the tonsil on the diseased side with a tonsil punch, instead of using the injections. In this way the removal of the swollen lymph nodes has been rendered unnecessary in many cases, and the operation and often unsightly scar avoided. The cervical swelling subsides and in several of the cases reported there had been no recurrence one or two years after the operation.

Hektoen, Ludvig: Typhoid Fever and Scarlet Fever, with Special Reference to the Diagnostic Value of Blood Cultures. (*Medical News,* September 26, 1903, p. 580.)

Attention is called first, to the possibility of mistaking typhoid fever for scarlet fever on account of early rash and angina, as well as the coexistence of the two diseases; and second, to the value of bacteriological examination of the blood in determining in such cases the existence of typhoid fever.

Schottmüller has shown that at the height of the attack in typhoid and paratyphoid fever the bacilli occur so constantly and in such numbers as to be readily demonstrable by cultural methods, several inoculations of 1 cc. of blood being made into many times that quantity of medium. The concurrence of typhoid and scarlatina has been emphasized by Curschmann, and Hektoen reports a case in which the two diseases developed at about the same time. The onset, rash, tongue and desquamation were distinctive of scarlet fever; the demonstration of typhoid bacilli and the specific agglutinins in the blood, as well as the subsequent course of the disease, confirmed the diagnosis of typhoid fever.

The writer cites 2 other cases in which there was an initial rash resembling scarlatina, but in which there was no desquamation; in both cases pure growths of typhoid bacilli were obtained from blood cultures. The diagnosis of scarlatina had been made in both instances.

On account of the presence of the typhoid bacilli in the blood in the early stages of this disease, proper cultural methods make an early diagnosis possible in such cases.

Biss, Hubert E. J: The Borderlands of Diphtheria and Scarlet Fever. (*The Lancet*, November 7, 1903, p. 1,285.)

The author decries the utilitarian tendency of the present time to make hard and fast classifications of symptoms as disregarding the essential continuity of the states, health and disease, which exist not only for man and other mammalia but for the whole biological kingdom. Symptoms of one disease have a way of shading off into those of another, though the causes of the symptoms may be quite distinct. Biss proposes to discuss some of the conditions that lie between those aggregations of morbid symptoms denominated scarlet fever and diphtheria, leaving out of account the cases resembling measles and rötheln, but including the tonsillitis group.

At the outset Biss announces himself opposed to "the fourth disease," saying that the only justification for the creation of a new disease is the erection of a fresh and sufficiently distinctive criterion for reference in case of doubt. Criteria shift their ground as knowledge advances, become of less importance, and old criteria may be positively baneful.

The symptoms of scarlet fever, diphtheria and tonsillitis (using that term in its broadest significance) afford many instructive examples of departure from their classical descriptions so as to merge insensibly into one another. Typical diphtheria may be placed at one end of a scale and typical scarlet fever at the other end. "Tonsillitis" includes a great variety of throat infections, some with the formation of a false membrane, and others with erythematous rashes that are not followed by peeling. In a diagram the relations between the various anomalous symptoms are shown graphically. The various groups of symptoms enumerated and interrelated are:—(1) Scarlatina, scarlatina with anomalous rash leading through tonsillitis with anomalous rash to tonsillitis and on through diphtheritic tonsillitis to diphtheria. (2) Scarlatina with diphtheria bacilli in the throat; scarlatina and diphtheria, through scarlatina without eruption but with diphtheria bacilli in the throat, through diphtheria with coccal infection of the throat to diphtheria. (3) Scarlatina *sine eruptione,* closely related to tonsillitis and to ulcerative tonsillitis with or without rash, through membranous tonsillitis to diphtheria.

Cases are cited to illustrate the gradations and the difficulty of diagnosis even by experts in the fever hospitals. One of the regrettable things in the administration of such hospitals is the constant breaking out of scarlet fever in diphtheria wards, and of diphtheria in scarlet fever wards. In most instances such outbreaks can be traced to some individual, the equivocal nature of whose illness had caused its real bearing to be overlooked.

Notwithstanding all the aids to diagnosis we possess, certain cases are undiagnosable, the fact being that scarlet fever, diphtheria and tonsillitis have many points of contact at which any one of the three diseases may exist.

Siegert, F.: A Contribution to the Study of Rickets. (*Jahrb. für Kinderh.*, December, 1903, p. 929.)

Contrary to the generally accepted view, the author strongly believes in the heredity of rickets. For the past ten years Siegert has been studying this question and collecting the data presented in this article. Four tables are included. The first consists of histories of thirty-one families in which the breast-fed babies had rickets. These histories contain the sex, age, duration of breast-feeding, age when first tooth appeared, age when walking first took place and the existence of rickets in the parents and grandparents.

An analysis of these cases showed that the mother in every instance but one had signs of previous rickets. This was shown by the form of the chest, the shape of the skull, enlarged wrists, bow-legs or difficult instrumental labors.

In one case the father was rachitic and the mother showed no signs of the disease.

The children of these parents showed very severe and protracted rickets although they were exclusively breast-fed.

The second table gives the histories of fourteen families in which there was no history of rickets among the parents and whose children were breast-fed.

None of these children showed evidences of rickets and there was no delayed dentition nor late walking.

The third table is made up of the histories of twelve families in which the parents showed no rickets and in which some of the children had rickets. The cause of the rickets in these cases was artificial feeding, diseases of the respiratory tract, age and social condition (illegitimacy) of parents.

The fourth table comprises the histories of fourteen families in which the parents had rickets and the children were artificially-fed. Rachitis in these babies differed from that in breast-fed babies in that it develops earlier, the dentition is more tardy, runs a more chronic course and has a higher mortality. The most severe forms of the disease occurred in the breast-fed babies with rachitic parentage. The death-rate of the 121 artificially-fed rachitic infants was 57 per cent., while in the breast-fed rachitic infants it was 36 per cent., and in the breast-fed immune babies it was 15 per cent.

From his investigations the author concludes that heredity is one of the most important etiological factors of rickets which is generally transmitted through the mother. Next to heredity the most important causes are, diseases of the digestive and respiratory tracts and moral condition of the parents.

Late dentition and late walking are dependent upon hereditary influences.

Comby, Jules: A Case of Roger's Disease. (*Arch. de Méd. des Enf.*, December, 1903, p. 744.)

Dr. H. Roger in 1879 described for the first time a new clinical type of congenital heart disease.

Marked cyanosis or blueness is the characteristic feature of most forms of congenital heart disease. In Roger's disease, however, there is no cyanosis. The lesion consists of an interventricular communication. This lesion is well tolerated and does not tend to shorten life. There are no subjective symptoms. The diagnosis is based solely on auscultation. There is a persistent, loud, unchangeable systolic murmur covering the middle part of the precordial region and not transmitted in the vessels. The point of maximum intensity is a little above the point of juncture of the fourth rib (left) with the sternum. The murmur is loud enough to be heard at the base, apex and at the back.

The opening between the ventricles varies in size and position. The diameter is from 5 to 10 mm. The large vessels and valves are always intact. Fifteen cases of this disease have been reported.

Comby's case was a girl two and one-half years old. The family history was good. She was born a little before term without interference and without any obstetrical accident. Was breast-fed. Had never been cyanotic. Was admitted to the hospital with the diagnosis of pulmonary tuberculosis. The examination of the heart on admission was as follows:—A well-marked systolic thrill over the precordium. Apex at fifth intercostal space. Pulsation regular and strong. On auscultation a very loud systolic murmur can be heard all over the precordial area. A diagnosis of Roger's disease was made on account of the intensity of the murmur, its position, absence of cyanosis, of disturbance of the peripheral circulation (edema, etc.) and the absence of endocarditis with valvular localization. The child died six weeks after admission from tuberculosis. The examination of the heart showed it to be normal in every respect with the exception of an opening between the ventricles. The valves were all normal and there was no trace of a recent or old inflammation of the endocardium. There was no trace of the ductus arteriosus or of the foramen ovale.

SURGERY.

Pearson, S. Vere, and Mummery, P. Lockhart: The After-Treatment of Empyema in Infants. (*The Practitioner*, August, 1903, p. 246.)

The writers consider especially the management of cases under two years old, after the operation has been performed. They insist that the after-treatment is at least as important as the operation, on account of the complications. If there is dyspnea or cyanosis immediately after operation, the inhalation of oxygen is advised, the gas being given constantly until the breathing is satisfactory. The child is to be loosely clothed and placed in its cot in a well-aired room, and should be allowed to sit up if breathing is thus rendered easier. As soon as possible the child should be sent out-doors and later to the seaside or the country. At the time of the frequent dressings the child should be rolled over onto the wound to facilitate drainage; irrigations are not advised. The rubber drainage tube should be of large caliber, but only long enough to go through the chest wall, and it should be removed at the earliest possible moment, sometimes as early as forty-eight hours, but on the average in nine days. Gauze should be used to keep the wound open for a few days longer.

In estimating the right time to do without the tube, attention must be paid to all the following points:—(1) The length of time during which the empyema has been present before the operation was performed; (2) the character of the pus at the time of the operation and of the discharge afterwards; (3) the size of the empyema, and (4) the general condition of the patient, especially the degree of anemia and wasting, the respiratory capacity and crying-power, the cough, the temperature, and the weight. If the empyema is of recent date, the lung will reëxpand more rapidly than when the effusion has remained *in situ* for some time before being let out. If the empyema is a very large one, the lung is the more likely to be extensively collapsed, and will take longer to become inflated again. When the pus is very thick, this is generally associated with chronicity and surrounding adhesions and fibrosis, rendering the obliteration of the cavity slow. When the discharge has become scanty and sero-purulent, or serous, unless there is some obvious contraindication, the use of the tube can be dispensed with. When an enfeebled baby does not show a good crying-power the respiratory force and the rate of healing of wounds and of inflation of the lung are diminished, and the empyema cavity takes longer to become obliterated. Such are some of the features to notice in considering when to remove the tube.

When the progress toward recovery is slow, when fever returns, when the appetite is poor, it is often very hard to ascertain the cause of the nonimprovement.

If such a state of affairs exists, there are three questions to be asked, namely:—(1) Is there a reaccumulation of pus in the part of the pleural cavity already drained, owing to inefficient drainage? (2) Is there a purulent collection elsewhere? or (3) Has some other complication arisen?

The answers to these questions can only be arrived at by a careful investigation of the physical signs and symptoms.

With regard to the treatment of these complications when they have arisen, it is most important, so long as drainage is required, that the opening into the chest should be wide. If in spite of careful attention the wound gets narrowed the pus tends to be retained, there should be no hesitation in at once enlarging the wound and, if necessary, removing a piece of rib to secure free drainage. When symptoms and signs of retained pus still persist, search must be made for a second pocket of pus encysted in some cavity other than that opened. A very good plan is to pass a catheter into the wound and push it in various directions until the pus is found. When there is an empyema on the opposite side of the chest, it is best to be content with simple aspiration of the pus for a day or so, until there has been time for a certain amount of reëxpansion of the lung on the side first affected. Later on a second operation can be performed.

A troublesome complication that sometimes occurs after empyema is the presence of a persistent sinus. This may be due to non-expansion of the lung; this, though the commonest cause among adults, is a rare one with infants, in whom the lung seldom fails to expand. In the absence of this cause, the presence of dead bone should be suspected, and looked for by carefully exploring the sinus with a probe. A portion of the rib is often found to be necrosed, the necrosis being most commonly along the lower border of the rib above the sinus. When this is the case, the whole of the necrosed portion of rib must be removed. Inadequate drainage from the chest is not an uncommon cause of persistent sinus. When the discharge from the sinus is intermittent, that is to say, when the wound keeps healing up and breaking down again, this cause must especially be suspected. The treatment is to reopen the wound freely, and drain all the pockets of pus that are found, or pack them with gauze and allow them to granulate up from the bottom. Other and rarer causes of persistent sinus are tubercular disease of the pleura and caries of the spine, to which the empyema may have been secondary.

Moynihan, B. G. A.: Congenital Hypertrophic Stenosis of the Pylorus. (*Medical News,* October 24, 1903, p. 780.)

After giving a history of the recognition of the condition, the author states that the symptoms of the disease are strikingly similar in most of the recorded cases. Soon after birth, the well-nourished and apparently normal infant begins to vomit after taking its food. The onset may occur on the first day, or not until four weeks after birth. At first the quantity vomited is small, and consists of only part of the meal; a small quantity of food is retained, a larger quantity is at once rejected. Later, even very small quantities are vomited, and change of the diet has only temporary effect. The vomitus shows very little digestive change, and bile is absent. The stomach tube passed periodically, reveals the fact that, if the food is not at once vomited, it is retained unabsorbed in the stomach over several feeding periods. Weight is lost steadily so that the child gradually emaciates. Constipation and subnormal temperature are constant features. A few days after the onset the contraction waves of the dilated stomach may be seen, and perhaps a transverse tumor felt at the pyloric end. As the abdomen becomes hollowed and sunken, these signs are more evident.

No satisfactory explanation of the muscular hyperplasia has yet been given. Pyloric hypertrophy has never been recorded as occurring in the fetus, however. The condition is not necessarily fatal, since some patients have recovered under careful feeding and stomach washing. The larger proportion of cases, however, must be treated surgically. Up to the end of 1902 pyloroplasty had been performed three times successfully; in a fourth case, the relief being imperfect, a gastroenterostomy was done later with good results. This patient was sixty-seven years old. Gastroenterostomy, always anterior, had been performed nine times; five patients recovered, four died. In one, death was due to obstruction caused by a Murphy button. Loreta's operation had been performed nine times with seven recoveries.

HYGIENE AND THERAPEUTICS.

Cumston, Charles Greene: Mercury Cyanid as a Surgical Antiseptic. (*New York and Philadelphia Medical Journal,* September 26, 1903, p. 615.)

The author has used this salt of mercury for over three years in abdominal and children's surgery, and has seen no toxic effect even in very young patients. Mercury cyanid does not irritate the tissues and does not coagulate albumin, two important properties in an antiseptic; solutions of the salt do not attack metals when rendered alkalin by the addition of soda in some form. With an alkalin solution of 1 to 1,000 or of 1 to 2,000 the hands remain soft, the tactile sense is not obtunded, and blood is easily washed off of hands and instruments.

The formula employed by the writer is as follows:—

Mercury cyanid	0.50 gram.
Sodium borate (C. P.)	1.00 "

Aniline red, sufficient to color the solution.

This combination is made into a tablet, one of which dissolved in one quart of water makes a solution of 1 to 2,000, the strength usually employed. This formula has been used in operative work on babies in the Boston Floating Hospital, in which institution the solution has been employed for the past two years for the sterilization of the nurses' hands, infected linen, etc., in the medical as well as the surgical wards. The result, has been more than satisfactory; the nurses' hands though almost continually wet with this solution remained soft and clean, a great contrast to conditions existing in former years, when at the end of their term of service the hands of the nurses were found to be sore, cracked, and hard from the effect of the bichlorid solution.

Gottheil, William S.: Sublamine in the Treatment of Parasitic Scalp Diseases. (*Medical News*, October 17, 1903, p. 735.)

As a substitute for the bichlorid of mercury, sublamine, which is the ethylendiamin sulphate of mercury, has certain advantages, the claim being made that it is absolutely non-irritant, so that even a 2 per cent. solution may be used; and that, since it does not coagulate albumin, its penetrant action is greater than that of the sublimate.

In an institution epidemic of ring-worm of the scalp the author made careful comparison of the results of treating different groups of children with chrysarobin, formalin, croton oil, bichlorid of mercury, salicylic and carbolic acids, iodin, the ethylendiamin citrate of mercury, and sublamine. All the usual precautions were taken in case of all the different applications. The cases treated with sublamine yielded more rapidly, and a greater proportion of patients were cured; so that the author concludes that sublamine is the most efficient application for use in ring-worm of the scalp.

Oppler, Therese: The Use of Coagulated Cow's Milk in Infant Feeding. (*Monat. f. Kinder.*, January, 1904, p. 530.)

Dungern in 1900 described a method of breaking up the casein of cow's milk into fine curds by adding a rennet ferment which he called Pegnin. In his test tube experiments he found that the milk thus coagulated was more quickly digested than ordinary modified cow's milk.

The milk is heated to the body temperature and a portion of the powder added. In two or three minutes the milk will have a jelly-like consistency. After a thorough shaking the coagulum is broken up into particles fine enough to pass through the ordinary rubber nipple. Pasteurized or diluted milk will not coagulate.

Previous observations on the use of this milk are open to criticism on account of the short length of time the cases were under observation. The writer gave this method a very thorough trial in Breslau, where 222 babies were fed on this milk. Of these 214 were out-patients and eight were in the hospital. A thorough study could only be made on 148 of the out-patients. Of this number 78 did badly and 36 of these 78 cases died.

In 70 cases the food was well-borne. Twenty-six babies did well at first but afterwards failed rapidly until other food was administered.

Of the babies under one month of age, 79 per cent. died; from two to three months 30 per cent., and over three months 22 per cent. died.

The use of this milk in cases of habitual vomiting and acute gastrointestinal disturbances gave satisfactory results.

From this series of cases the author sets forth the following indications for the use of this milk. Cases where the general condition is bad on account of exclusive starch diet, where there is gastrointestinal disease and where there is habitual vomiting.

Its use is contraindicated during the first month of life and in diseases due to overfeeding.

This form of feeding should not be employed longer than a few weeks at a time.

Carbonel y Soles, F.: Creosote Medication in Chronic Intestinal Catarrhs of Infants. (*Archiv. de Gin. Obstetr. y Pediatr.*, 1903, Vol. xvi., No. 18, p. 401.)

Acute intestinal catarrhs have a marked tendency to become chronic in infancy and in such cases the treatment presents considerable difficulties. The chief element in the treatment of these conditions is the diet, and very often a change to a proper diet, such as is represented by the substitution of a wet nurse for artificial feeding, suffices to achieve a cure. But in many cases the use of drugs has given good results in combination with appropriate dieting. Creosote or its salts, with or without cod-liver oil, constitutes one of the most efficient forms of medication in these chronic intestinal catarrhs. Creosote fulfils a number of indications in these cases. It prevents fermentation, increases assimilation, and promotes the nutrition of the tissues. At the same time it acts as an antiseptic in the intestine, and corrects the inflammation of its mucosa. Guaiacol, or the tannate of creosote, are the best preparations for these cases, and the author employed them beneficially in a number of patients with chronic diarrhea. Whenever the age of the patient, the summer season, or the presence of severe diarrhea prevent the use of cod-liver oil with creosote, he advises the use of creosote tannate. This is to be given in daily doses of from 1 to 5 centigrams with elixir of pepsin, or with the glycerophosphate of sodium in water or simple syrup. This treatment stimulates the appetite, renders the stools less offensive, diminishes the fever, and increases the weight of the body in a few weeks. The only contraindication is a pre-existing lesion of the kidney, in which case the urine will show the signs of a congestion and the creosote medication must be stopped. An emulsion of guaiacol with cod-liver oil, or if need be, also with calcium lactophosphate or hypophosphite is a most valuable remedy in both athrepsia and rickets.

Spolverini: Intubation or Tracheotomy in Diphtheritic Croup? (*Il Policlinico,* Vol. ix., No. 28, quoted in *Archiv. di Patol. e Clin. Inf.*, 1903, Vol. ii., No. 5–7.)

The author observed 498 cases of diphtheria in the San Spirito Hospital of Rome, and found that there was a great difference between the mortality of children after tracheotomy and those after intubation. While the former showed a mortality of 70 per cent., the latter showed a death rate barely reaching 30 per cent. He is, therefore, an enthusiastic advocate of intubation against tracheotomy—an individual attitude which is still noteworthy in Italy, in spite of the results achieved with intubation in America and elsewhere. Tracheotomy, according to Spolverini, is indicated only in special cases. He prefers the intubation forceps with Valagussa's curve, and describes a form of this instrument which he has devised and which has the advantage of serving both as intubator and extubator. He advises the use of ebonite tubes which are corrugated, and are of olivary shape. Intubation may be performed at any age, and the author reports intubations in five nursing infants. The rule about extubation should be that the child must be extubated as early as possible, the average being after from thirty-seven to forty-eight hours.

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Original Communications.

THE REDUCTION IN THE TUBERCULAR DEATH-RATE IN CHILDREN IN NEW YORK CITY.*

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I think there can be no question that the factor of socalled heredity in the causation of tuberculosis, the frequent recurrence of cases in the same families in the same and succeeding generations, is largely to be explained through house infection. I think it may be said that most authorities now accept this view. I do not mean to intimate, however, that a special susceptibility to tubercular infection may not be a family characteristic and may not be inherited. I would not call this predisposition, but merely susceptibility.

In a family in which a case of pulmonary tuberculosis in the infectious stage exists, an infant from the very earliest moments of life is seriously exposed to danger of infection. During the first year the exposure is not only through the breathing of air, which may contain bacilli suspended in it in the form of dust, but it is also from the danger of infection through the direct transference of tubercle bacilli from the sick person in the act of kissing, or through the transfer of food from the mouth of the mother to that of the infant, as is frequently done, especially among the lower classes. When a little older the child in an infected house is exposed to an even greater extent, for as it creeps upon the floor, especially in apartments in crowded tenement house districts, the hands of the infant are likely to be soiled by the expectoration, which has been carelessly discharged on the floor, or the dust is wiped from the floors and objects near the floor and is transferred, with the tubercle bacilli which it may contain, directly to the mouth of the infant. And more than this, creeping on the floor the child is still further exposed to the danger of inhaling tubercle bacilli with the infected dust which is raised in every movement of every person in the room.

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* Read before the New York Academy of Medicine, April 7, 1904, at a Symposium on "Tuberculosis in Children," under the auspices of the Section on Pediatrics.

In addition to these modes of infection there is also the possible infection through the use of infected eating and drinking utensils and the taking of milk from tubercular cows. This last source of infection I am not at this moment disposed to discuss.

Very slight consideration, however, shows that the infant in an infected family is much more exposed to the possibility of infection, especially among the working classes in the tenement houses, than any other member of the family, and this exposure is largely a result of the infection of the living apartment.

There is comparatively little danger that young children will be sufficiently exposed outside of the family to tubercular disease to acquire infection until after the child has at least reached the age of four or five years.

If then, the preventive measures which have been adopted in recent years for the restriction of tuberculosis have had any considerable value this should first be indicated in a reduction in the death rate from tuberculosis in children under fifteen. It is perhaps better to extend the age limit to fifteen years, because many of the cases in which the disease is contracted during the first five years of life do not terminate fatally until a later period, and much the larger proportion of cases of tuberculosis in young life occur during the first five years of life.

The preventive measures which have been adopted in New York City during the past ten or twelve years, and which consist chiefly in the provision of hospital accommodation for advanced cases of consumption, in the disinfection of apartments vacated by them by death or removal, and in the education of consumptives and their families as to the nature of the disease and the proper disposal of the expectoration, at least these are the measures which particularly apply to the tenement house population, should result in a lesser degree of house infection and should be followed by a lower death rate from the tubercular diseases in the early periods of life.

With a view to determining what influence, if any, the measures which have been adopted in New York have had, I caused to be collected data in regard to the deaths from pulmonary tuberculosis and tubercular meningitis under fifteen years of age for a period of twenty years. These two forms of the disease were selected because these are the types of disease in which the diagnosis is most likely to be approximately accurate. The diagnosis of tabes dysenterica is such an indefinite one and includes so many conditions not tubercular that this type has been excluded. These data show that during the ten year period ending in 1902 there had been a decrease of more than 40 per cent. in the death rate from pulmonary tuberculosis and tubercular meningitis in children under fifteen years of age, and that during a period of twenty years the decrease has considerably exceeded 50 per cent. In 1892 the death rate from these causes was 5.0 per 10,000, and in 1902 it was 2.96.

DEATHS FROM PULMONARY TUBERCULOSIS AND TUBERCULAR MENINGITIS, 0-15 YEARS OLD, CITY OF NEW YORK, 1883-1903.

		0–5	5–10	10–15	Total under fifteen.	Total, both under fifteen.	Yearly death rate per 1000 of entire population.	Death rate per 1000 population; 5 year periods.
1883	Tubercular Meningitis*	485	46	10	541			0.67
	Pulmonary Tuberculosis	172	30	59	261	802	0.61	
1884	T. M.*	633	37	13	683			
	P. T.	207	36	55	298	981	0.72	
1885	T. M.*	594	40	5	639			
	P. T.	200	35	65	399	938	0.67	
1886	T. M.*	648	58	15	721			
	P. T.	216	38	48	302	1023	0.71	
1887	T. M.*	570	38	13	621			
	P. T.	206	47	48	301	922	0.62	
1888	T. M.	440	53†		493			0.49
	P. T.	154	100†		254	747	0.49	
1889	T. M.	498	45†		543			
	P. T.	138	110†		238	781	0.50	
1890	T. M.	500	44	12	556			
	P. T.	151	39	53	543	799	0.50	
1891	T. M.	524	48	11	583			
	P. T.	118	29	62	210	792	0.48	
1892	T. M.	541	50	14	605			
	P. T.	158	39	56	253	858	0.50	

* Includes hydrocephalus. † 5–15 years.

		0–5	5–10	10–15	Total under fifteen.	Total, both under fifteen.	Yearly death rate per 1000 of entire population.	Death rate per 1000 population; 5 year periods.
1893	T. M.	542	54	11	607			0.42
	P. T.	157	34	68	259	866	0.49	
1894	T. M.	522	63	13	598			
	P. T.	128	32	50	210	808	0.45	
1895	T. M.	526	43	16	585			
	P. T.	165	24	50	239	824	0.44	
1896	T. M.	454	45	12	511			
	P. T.	120	32	48	200	711	0.37	
1897	T. M.	462	47	8	517			
	P. T.	128	25	44	197	714	0.37	
1898	T. M.	481	49	10	540			0.34
	P. T.	100	31	45	176	716	0.36	
1899	T. M.	475	45	12	532			
	P. T.	143	28	55	226	758	0.38	
1900	T. M.	447	57	18	522			
	P. T.	116	35	42	193	715	0.35	
1901	T. M.	392	49	16	457			
	P. T.	117	28	55	200	657	0.31	
1902	T. M.	400	59	14	473			
	P. T.	88	26	47	161	634	0.296	
1903	T. M.	426	58	15	499			
	P. T.	79	31	59	169	668	0.31	

With an extension of the regulations which are now being enforced, with wider diffusion of information as to the nature of the disease, and larger facilities for the care of advanced cases, I look for a still further and a rapid reduction in the death rate in this early period of life.

It seems to me that these data afford perhaps greater encouragement in the crusade for the prevention of tubercular disease than any other which are at our command.

Anemia after Vaccination. — Bellotti (*Gazz. degli Osped. e delle Clinich.*, May 10, 1903) calls attention to the fact that vaccination with glycerinated lymph produces in some children an anemia which lasts about a year after the inoculation of vaccinia. This anemia is solely due to the vaccination, and has not been described heretofore.—*New York Medical Journal and Philadelphia Medical Journal.*

POLYCYTHEMIA OF CONGENITAL HEART DISEASE.*

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Polycythemia in congenital heart disease is sufficiently constant to warrant investigation. The fundamental cause is frequently regarded as related to the conditions underlying cyanosis. Blood concentration, variations in pressure, longevity of corpuscles, deficient aeration, and increased production of red blood corpuscles have been suggested as solving the problem. It is the desire of the writer to urge the claims of an actual increased production of red blood corpuscles due to the effort to bring about the oxygen equilibration of the body and proper cell nutrition.

Fetal Circulation.—In considering the fetal circulation, the heart structure may be roughly described as follows:—There is a right and left auricle with confluence of blood streams through the foramen ovale. The blood from the postcaval veins is guided by the Eustachian valves to the foramen ovale. The blood from the precaval veins goes over the Thebesian valves through the tricuspid orifice into the right ventricle. Only a small amount of blood goes from the right ventricle through the pulmonary artery to the lungs, as the fetus does not receive its oxygen supply from the lungs. The bulk of the blood passes through the pulmonary artery as far as the ductus arteriosus, through which it flows into the aorta, a condition normal in snakes, lizards, and turtles. The left auricle forces its blood through the mitral orifice into the left ventricle, whence it is pumped into the aorta. The blood of the aorta courses through the fetal body until it reaches the umbilical arteries which carry it to the placenta for purification.

Fetal Respiration.—The respiratory and nutritional functions must be exercised for the fetus by the mother, though there is no direct communication between the fetal and maternal blood Granting for the moment that from the amniotic fluid comes a portion of the fetal nourishment, it cannot be gainsaid that the respiration, purification and oxygenation of the fetal corpuscles occurs during the passage of the blood through the placenta. The umbilical vein bears to the fetal cells a supply of oxygenated arterial blood. It is reasonable to account for this change of chemical structure, largely, by the laws of diffusion, in view of the thin layer of cells between the fetal placental villi and the maternal intervillous blood sinuses. There is a rough correspondence between the size of the fetus at term and the placenta. This leads to the inference that greater area is necessary to gain a proper blood supply, proportionate to the size of the fetus.

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* Read by Abstract at the New York Pathological Society, April 13, 1904.

The Blood at Birth.—It is well known that at birth a polycythemia is present. Gunlobin's average was 7,500,000; Rotch's 5,900,000; Cabot's 7 to 8,000,000. At ten hours Otto found 6,912,000 and at twenty-five hours 6,496,000. Langemeister and Meissel found the red corpuscles of the child relatively increased in comparison with the mother. Elder and Hutchinson figured the blood of new-born babes richer in red cells than the mother's by 350,000 to 500,000.

The tying of the umbilical cord influences this excess and early ligation probably accounts for those cases in which the blood count at birth is not greater than 5,087,000 to 5,576,000. Schiff has shown that the specific gravity of the blood at birth is higher when ligation of the cord is delayed, but finds no relation between the specific gravity, amount of hemoglobin, and number of red blood corpuscles. He regarded the increase of hemoglobin as due to a real increase in the cells. There was noted a fall of the specific gravity from 1,076 to 10,652 during the first ten days. Rotch gives 1,065 as the specific gravity and believes it to vary directly with the hemoglobin.

Circulatory Changes During Early Life.—At birth the child's blood is forced into new channels, comparatively speaking, since the demands for oxygen can be satisfied only in the lungs. As the lungs take up their new function, the foramen ovale is not required to furnish a short cut to the aorta and hence tends to close, though it frequently persists as a pin head aperature. From the same cause, the ductus arteriosus has no further reason for remaining patulous. By gradual sclerotic changes, altering arterial calibre as the modified circulatory system demands, there arises an adjustment of the systemic and pulmonary circulations, so that the pulmonary circulation secures the aeration of all blood going through the systemic circulation. While this equilibration is occurring, certain blood alterations are noted, namely, a decrease of the polycythemia and lessening of hemoglobin.

Congenital Cardiac Malformations.—Errors of development are frequently manifest in the persistence during life of conditions desirable only for intrauterine existence. There may be simply a patulous foramen ovale, or the interventricular septum may be incomplete; the pulmonary orifice may be stenosed and the ductus arteriosus persist to functionate as a natural safety valve. These four conditions, singly or combined, constitute the most important congenital cardiac conditions found.

Cyanosis as a Symptom.—The usual symptoms are cyanosis, dyspnea, and clubbed fingers. A considerable proportion of cases show no objective symptoms, not even evanescent cyanosis. Morse reported 14 out of 44 cases wherein, previous to examination, there was no suspicion of congenital heart disease. Townsend found 1 out of 30 free from cyanosis and 4 presenting it occasionally. The cyanosis in many instances does not appear until the child is over a month or over a year old. Despite the lack of cyanosis, polycythemia is usually present. To quote Cabot:—"In 1 case, entirely without evidence of stasis, I counted 8,431,000. Townsend has collected 30 such cases ranging from 6,000,000 to 9,000,000. How such cases are to be explained I do not know. The ordinary explanation of concentration of the blood will not hold in cases in which no stasis or lack of compensation exists; yet the skin is blue and the blood counts are enormous. There is no doubt that the peripheral capillaries always contain more corpuscles per cubic millimeter than do the veins. Whether this is on account of the loss of water and consequent drain of blood from the skin capillaries is uncertain; but in congenital heart disease both capillary and venous blood is overcrowded with corpuscles and the explanation is difficult."

Griffith claims that cyanosis depends on pulmonary stenosis more than on any other condition. Cyanosis as the most marked symptom has given the name "morbus ceruleus," but blueness may exist without cardiac lesion.

Polycythemia without Heart Disease.—Polycythemia may also exist without any derangement of the heart. Townsend reported 2 cases, of Cabot's, both in women over fifty years of age; one had 10,000,000, the other 12,000,000 red blood corpuscles; but there was no heart disease.

Relative Polycythemia.—Stengel states that "the imperfect oxidation of the blood doubtless causes profound effects." He noted the frequent excess of red corpuscles in congenital cyanosis and regarded it as a relative polycythemia as is found in "certain cardiac diseases with *slow failure of compensation* and especially in congenital cyanosis." He believed not in an absolute polycythemia to furnish greater oxidizing surface, but in a relative increase of corpuscles due to stagnation and inspissation of the blood.

Cyanosis and Mixture of Arterial and Venous Blood.—Broadbent regards the explanation of cyanosis as uncertain. Hunter, Senac and Corvisart thought it due to the commingling of arterial and venous blood, resulting from the incomplete interventricular septum or patulous ductus arteriosus. It is well known that cyanosis may exist without blood mixture; and intermixture without cyanosis, as in arteriovenous aneurism.

Stillé, having found 53 out of 77 cases with pulmonary obstruction, concluded that venous congestion, attendant upon such a condition, is the most common cause of cyanosis. Moussous and French conclude that cyanosis is due to the action of three causes in congenital heart disease:—(1) Mixture of arterial and venous blood; (2) insufficiency of oxygenation due to pulmonary stenosis; (3) venous stasis.

Polycythemia and Corpuscular Longevity.—Gibbson argues that the corpuscular "wear and tear" is decreased, because each corpuscle does not go through the pulmonary capillaries each time it reaches the right side of the heart. As a result each corpuscle is not subjected to the stress of gaseous interchange in the lungs as often as would be required if the circulation were normal. Because of this lessened wear the length of life for each corpuscle is increased. With the rate of corpuscular production constant and the length of corpuscular life increased polycythemia naturally follows.

Insufficient Oxygenation and Polycythemia.—Arcangeli rightly claims that with deficient amount of blood going to the lungs in cases of pulmonary stenosis, there is insufficient oxidation. This lack of oxygen stimulates the hematopoietic tissues to productive activity with cyanosis and polycythemia as a result.

Fromherz extends this theory into one of compensation and explains the value of the mixture of arterial and venous blood through the foramen ovale in cases of pulmonary stenosis as a natural safety valve. He makes the fair inference that the increase of red corpuscles should be proportional to the demands for oxygen. In the blood the oxygen pressure is limited; but the power of the lungs to furnish oxygen is practically limited only by the number of red corpuscles to which it may yield it. He quotes Reinert as figuring that one cubic millimeter can contain only 8,872,500 cells of normal size. It is interesting to note his case of cyanosis with a blood count of only 4,500,000 red cells.

Prognostic Value of Polycythemia.—Vaquez and Quiserne distinguish the polycythemia of cyanosis with counts of 8,000,000 to 9,000,000, due to concentration of the blood, from the polycythemia of congenital heart disease, which they regard as due to the new formation of red cells and in which the count averages about 6,000,000. They consider the polycythemia of congenital heart disease of prognostic value, in that a marked increase of corpuscles indicates a weakening of the body cells, which the blood endeavors to save. The greater the polycythemia the worse the prognosis.

Polycythemia due to Deficient Oxygenation in Conditions other than Congenital Heart Disease.—This leads to the conclusion that a decrease in oxygen available in the blood should be marked by a polycythemia. Certainly gas-poisoning, in which the oxygen-carrying power of the blood is rapidly lessened, shows an increase of red corpuscles. Von Limbec's 2 cases of gas-poisoning gave counts of 5,570,000 and 6,630,000; Munger and Palma's case showed 5,570,000; and Martin's case 6,500,000. Packard reported a case of carbon dioxid convulsions in a child whose only other marked symptom was cyanosis. Autopsy showed a patulous ductus arteriosus. Phosphorus poisoning causes polycythemia and 8,650,000 have been reported in one case.

Deficient Aeration a Cause of Cyanosis.—Peacock suggests deficient aeration as a possible contributing cause, stating "where only a small proportion of the blood is submitted to aeration in the lungs, the whole mass must be of dark color and, consequently, the hue of the surface will be proportionately dark." This is especially true in pulmonary stenosis. While cyanosis may in part account for polycythemia, it fails to explain those cases that are free from stasis. Rotch states that cyanosis may arise from incomplete oxygenation of the blood, or merely from mixture of arterial and venous blood. Holt gets at the root of the matter in stating: "In a great majority of the cases (cyanosis) the explanation is a deficient oxidation of the blood in the lungs owing to some interference with the pulmonary circulation."

Polycythemia and Blood Concentration.—Coles believes that there is polycythemia, "in conditions in which concentration of the blood occurs as the result of considerable loss of liquids, particularly from the intestinal tract as in cholera and diarrhea." Von Limbec writes: "all authors agree in considering that the question of the presence or absence of polycythemia depends upon variations in the concentration of the blood."

Peripheral Polycythemia and Cyanosis.—Peripheral polycythemia, according to Cabot, depends on peripheral cyanosis due to cardiac insufficiency, insufficient aeration of the blood (pneumonia and congenital heart disease). Then he states: "It is evident that some of these conditions, *e.g.*, congenital heart disease, may not involve any peripheral stasis at all, and in the absence of this it is not easy to account for the increased number of corpuscles in the drop. . . . There seems to be no reason to suppose that there is in these cases any unequal distribution of cells in favor of the periphery, such as is obviously the condition in ordinary cyanosis with stasis."

Corpuscular Formation Following Hemorrhage.—The American Text Book of Physiology, treating of the effect of loss of blood, explains that "the production of red corpuscles in the red marrow is increased because, apparently, the anemic condition causes diminution of the ogygen supply to the hematopoietic tissues, and thereby stimulates the erythroblasts to more rapid multiplication."

Cause of Polycythemia of Infancy.—Considering the polycythemia of the first few days of infancy, Schiff maintains that during this period the need of the red corpuscles is much greater owing to the marked sudden increase of metabolism. The greater the need of red corpuscles, the greater, in general, is the amount formed and as the metabolism after the first few days becomes relatively moderate, fewer red blood cells are needed and therefore fewer are formed.

Influence of Oxygen Pressure on Polycythemia.—After investigating blood changes due to variations of pressure, Campbell and Hoagland concluded that peripheral polycythemia is due to altered vasomotor condition of the peripheral vessels, incidental to diminished barometric pressure. Von Limbec quotes the conclusion of a writer in the *Centralblatt für klinische Medicin,* 1885, as believing that diminished atmospheric pressure does not cause diminished oxidation of the blood; that wherever the pressure of oxygen is low, new formation of red blood cells takes place. Hence, if oxygen pressure in the blood were low, there would result an increase of red blood cells formation. The fall in oxygen pressure might be brought about by diminished atmospheric pressure or by deficient aeration of the blood.

Polycythemia of Acquired Heart Disease.—In chronic cardiac disease Grawitz believes the polycythemia to be due to loss of liquids from the blood with consequent inspissation, owing to lowered blood pressure and vascular dilatation. In the language of Da Costa, "Hydremia gives way to a concentration of the blood mass, this change being due mainly to the increased overflow of plasma from the vessels into the neighboring tissues; and perhaps to the excessive loss of water, especially through the lungs as Grawitz has suggested." With acute rupture of compensation hydremia exists, as marked by a decrease in the specific gravity, in the hemoglobin, and in the number of red blood corpuscles. Stengel noted 50 per cent. to 40 per cent. decrease of red corpuscles in acute endocarditis. He likewise observed that in chronic heart disease, with continued slight inadequacy of circulation, there is frequently polycythemia. In congenital heart disease he explained the polycythemia as due to a disturbed distribution of the corpuscles.

Interrelation of Specific Gravity, Hemoglobin and Erythrocytes.—In general it is stated that the specific gravity of the blood varies directly with the hemoglobin and upon this rests the value of approximating the hemoglobin from the specific gravity as determined by Hammerschlag's method. The number of red blood cells is no absolute guide to the amount of hemoglobin, as is seen by their relations in chlorosis and pernicious anemia. Nor does the hemoglobin give any accurate idea of the number of red corpuscles. For practical purposes, however, the approximations of all these relations will suffice.

Relation of Red Corpuscles, Hemoglobin and Color Index in Congenital Heart Disease.—Table A consists of 15 cases of congenital heart disease in which red blood cell counts and hemoglobin estimations have been reported. Taking 5,000,000 red corpuscles as the unit of comparison and 100 per cent. hemoglobin as the normal for this number of cells, the increase of red corpuscles is represented, and the color index or *valeur globulaire* has been calculated. From the table it may be seen that there was an average increase of circulating corpuscles to 150.22 per cent. while the color index was reduced to 73.5 per cent. This represents a loss of hemoglobin per corpuscle of 26.5 per cent. Representing the total hemoglobin per cubic millimeter as $5,000,000 \times 100 = 500,000,000$, it is readily understood that with the hemoglobin per corpuscle reduced to 73.5 per cent., $\frac{500,000,000}{73.5}$ would represent the number of red corpuscles necessary to bring the blood to its previous hemoglobin standard per cubic millimeter. This ideal compensation would require 6,805,442 red corpuscles. With the average red cell count (as shown in Table A), 7,494,616

TABLE A.

Reported by	Per cent. increase above 5,000,000.	Erythrocytic Count.	Per cent. Hemoglobin.	Color index (Valeur globulaire).
Wile	.6336	8,168,000	114	69.9
"	.6016	8,080,000	120	74.8
"	.25*	3,745,140	50	66.6
"	.08	5,040,000	102	94.4
Scott	.88	9,400,000	117	62.3
Fromherz	.12	5,600,000	114	101.8
"	.44	7,200,000	135	93.7
"	.52	7,600,000	114	75.0
Townsend	.99	9,950,000	85	42.7
"	.71	8,595,000	110	64.3
"	.20	6,000,000	80	66.6
Gibbson	.694	8,470,000	110	65.0
"	.34	6,700,000	92	68.6
Banholzer	.88	9,400,000	160	85.1
"	.694	8,470,000	110	64.9
Average	.5022	7,494,616	107.5	73.5

* Decrease. The child had been sick with fever for five days, and in consequence had severe anemia. The color index remains fairly high.

and the color index 73.5, the total hemoglobin per cubic millimeter would be 7,494,616 × 73.5 = 550,754,276. There is thus a difference between the average of red corpuscles actually found and the theoretical estimate for an index of 73.5 amounting to 689,174 red cells (7,494,616 minus 6,805,442.) The difference between the normal total hemoglobin per cubic millimeter and that based on clinical findings is 550,754,276—500,000,000=50,754,276. These differences may be partly explained as due to the personal equation in estimating the amount of hemoglobin and in counting the red blood corpuscles. It is to be noted that the discrepancy between the ideal number of red cells and the clinical approximation is less than 10 per cent. Another explanation is to be had in the fact that in polycythemia the red corpuscles are below the average in size. A third factor to be considered is the degree of anemia possibly present in each case. On the basis of concentration of blood, to account for this polycythemia of 7,494,616, there would be required an absorption of the blood serum to two-thirds its bulk

—a manifest absurdity. This table to a large extent supports Fromherz's demands that the increase of corpuscles should be proportionate to the oxygen deficiency. The amount of hemoglobin per corpuscle indicates the corpuscular power of oxygen attraction. The color index is probably lowered because the number of red cells is greatly increased and their size approaches the minimum, as their number does Reinert's maximum. Thus is secured the smallest number of red corpuscles necessary, per cubic millimeter, to secure proper aeration, when, owing to persisting fetal type of circulation, a considerable proportion of red corpuscles fails to go through the pulmonary system at each ventricular systole.

TABLE B.

Age.	Number of Leukocytes.		Number of Erythrocytes.
1⅓ years	11,600		9,950,000
10½ "	6,800		8,595,000
23 "	6,400*		6,000,000
10 "	12,000		8,470,000
2⅓ "	12,000		6,700,000
30 "	5,743*		8,168,000
6 "	7,840		8,750,000
3 "	11,944		5,040,000
	14,000		9,300,000
	9,800		7,200,000
	11,000		7,600,000
	16,000		8,100,000
	8,200		9,400,000
Average	10,256		7,945,615
Ratio	1	to	775

Relation of Leukocytes to Red Blood Corpuscles in Congenital Heart Disease.—Table B is designed to show the relation between the leukocytes and erythrocytes. From this we find the average ratio to be 1 to 775. Inasmuch as most of the counts represent children under ten years, where the leukocytes are usually above the average in number, it is safe to assert that there is no leukocytosis parallel to the polycythemia, as any theory of stasis or inspissation would require.

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* Note the low leukocyte counts in the two adults despite polycythemia.

Uniformity of Blood Estimations in Congenital Heart Disease.—With polycythemia due to venous stasis, cyanosis, mixture of arterial and venous blood, one would expect to find greater variations in blood counts in different individuals—particularly in the absence of symptoms of failure of compensation. In other words there is little likelihood of so great a uniformity of inspissation as the red cell counts make evident. Then, again, if the blood were otherwise normal, the color index would have great fluctuation, dependent of course upon the degree of anemia present in each individual. If, however, the blood is normal in structure and the difficulty lies in failure of complete oxygenation, there would have to be an increased number of red corpuscles to bring up the hemoglobin value of each cubic millimeter and maintain the oxygen equilibrium for the body cells.

Polycythemia due to Metabolic Activity and Decreased Intravascular Oxygen Pressure.—If lowered intravascular oxygen pressure stimulates blood formation, increased work of the hematopoietic tissues would be required in the cases of deficient oxygenation present in congenital heart disease. If increase of metabolism calls for increase of red blood cells, how much greater must be the demand when each and every corpuscle may be said to be partially starved by its lack of oxygen! The gross daily amount of oxygen carried by each corpuscle depends upon the number of times it succeeds in passing through the pulmonary capillaries.

Polycythemia and Fetal Circulation.—During fetal life, with oxygenation secured by diffusion, a large number of red corpuscles is required to bring about proper cell nutrition. With the continuation of this immature form of circulation during extrauterine life, there is a necessity for a polycythemia to meet the wants of an increased metabolism. As the lungs offer a very large area for gaseous interchange, the blood is quickly aerated. Hence there is no need of a constantly increasing number of red corpuscles after the oxygen equilibrium has been gained. Each red cell contains a supposably definite amount of hemoglobin whose affinity for oxygen depends upon a single iron atom. With a constant demand for oxygen by all the cells, several possibilities present themselves:—(1) increase of the power of the individual cell to carry oxygen; (2) more rapid aeration through increased cardiac exertion; (3) an actual increase of the number of cells to carry oxygen.

Three Methods of Increasing Oxygen Available to the Body Cells.—(1) To increase the power of the cell to carry oxygen is impossible, because of the limitation of this ability to the single iron atom of the hemoglobin. If the total amount of hemoglobin per corpuscle were increased, the weight and bulk of the blood per cubic millimeter would be greatly increased even if the number of corpuscles were to remain stationary. With pulmonary stenosis only a portion could be aerated out of each mass leaving the congested venous heart: oxygen equilibrium could not be maintained. (2) Attempts at more rapid aeration by increased heart action show themselves on exertion, but the increased demands upon the myocardium soon bring about its weakening and power of compensation is lost. (3) To increase the number of red corpuscles without greatly altering the actual quantitative mass of blood propelled through the lungs does not offer any difficulties. It offers the solution to the problem of suboxidation and cell starvation without too great a strain upon the heart itself.

Polycythemia due to Compensatory Hypertrophy of the Red Corpuscles.—The blood may be regarded as a tissue with fluid intercellular substance and as such liable to atrophy, degeneration, and hypertrophy of its various constituent cells. If we believe in the laws of tissue repair, the *vis medicatrix naturæ,* it is logical and reasonable to believe that in the polycythemia of congenital heart disease we have an excellent example of "compensatory hypertrophy." The red corpuscles are increased in number in order to secure the amount of oxygen necessary for the proper nutrition and development of the various cells of the body. The polycythemia of congenital heart disease is, therefore, to be regarded as an actual and compensatory increase in the number of red blood corpuscles.

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TONSILITIS A CAUSE OF ACUTE NEPHRITIS.

BY JOHN LOVETT MORSE, A.M., M.D.,

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Within the last few years a number of papers have appeared in which the importance of tonsilitis in the etiology of acute endocarditis has been emphasized. Little attention, however, has been paid to its possible importance in the etiology of acute nephritis. Very few of the American textbooks either on internal medicine or on the diseases of children refer to it, although several speak of infectious sore throat, infectious angina or infectious tonsilitis among the more unusual causes. The German authors refer to it even less frequently than do the American. The French, on the other hand, seem to have paid more attention to it, not only in their textbooks but also in their periodical literature. It would seem reasonable that tonsilitis, being due as it is to bacterial infection and being often complicated by cervical adenitis, peritonsilar abscess, or acute inflammation of the middle ear, should lead to inflammation of the kidney as do other acute diseases due to microörganisms. An additional reason why it might naturally be followed by inflammation of the kidney is that it is usually caused by streptococci, and, as is well known, the usual cause of acute nephritis in scarlet fever, which is more often than any other disease complicated by acute nephritis, is the streptococcus. Nevertheless, judging from the literature of this subject, tonsilitis is seldom complicated by, or the cause of, acute nephritis. During the last eight months, however, I have happened to see 4 cases of tonsilitis followed by acute nephritis, which leads me to believe that tonsilitis must be more often followed by nephritis than is usually supposed. Two of these cases were in adults, and two in children. In all it seemed possible to absolutely exclude scarlet fever or previous disease of the kidneys. The histories of these cases are as follows:—

Case I.—Herbert C., twenty-eight years old, was seen January 8, 1904, in consultation with Dr. May of Newton Centre. He had had scarlet fever as a boy and had always been well and vigorous. He had passed careful life insurance examinations four years and four weeks previously. The urine was examined on both occasions. The day after the last examination he began to have a sore throat. The tonsils were very much swollen and a peritonsilar abscess in one or both was suspected. They were not opened as no pointing could be made out, but probably ruptured posteriorly. He recovered very slowly from this illness and did not feel able to go to work or to do much of anything. The symptoms were very indefinite for a time, but after about two weeks he began to complain of nausea and of oppression in the stomach. These symptoms continued and a few days before he was seen he began to have headache, which was worse in the morning. He thought that his urine was dark during the two weeks but was not sure. He had noticed nothing as to the amount. Edema appeared January 5th. He was then put to bed and kept on a milk diet. The urine was high colored and contained considerable albumin, but the sediment was not examined. He passed three pints of urine during the day of January 7th, but the next morning had a convulsion. He was seen in the afternoon.

Physical Examination.—He was well developed and nourished. The skin had a somewhat pasty appearance. There was slight puffiness about the eyes. The tongue was somewhat coated. The heart was normal in every way; the second aortic sound was not accentuated. The pulse was full and of rather high tension. Numerous fine moist râles were heard in both bases behind. There was slight edema of the feet but none of the legs. The examination was otherwise entirely negative.

The urine was slightly smoky in color, acid, and of a specific gravity of 1,012. It contained ⅛ per cent. or more of albumin. The sediment showed much normal and a little abnormal blood, many small round cells and an occasional hyalin and epithelial cast. The urea was 18 grams.

CASE II.—Percy P., a physician, thirty-five years old, was seen February 13, 1904, in consultation with Dr. Garland of Gloucester. He had had scarlet fever as a child. His urine had been examined several years and some months previously and found normal. Except for hip disease as a child he had always been well and strong.

He was taken suddenly sick January 21, 1904, with a sore throat. The throat was a good deal inflamed and the tonsils enlarged. There was some exudation on both. The temperature rose to 103°F. Fearing that it might be diphtheria he took a large dose of antitoxin. The throat was clear the next day, however, and no Klebs-Löffler bacilli were found. The temperature was normal on the 23d and he was out on the 24th. Although up and about his work he did not feel as well as usual. He vomited the whole of the night of February 2d but kept about his work next day although his temperature was 104°F. He noticed that the urine was dark colored, but being very busy forgot to examine it. He continued to have considerable fever and finally went to bed. He vomited again on the 6th and 7th, when his temperature began to be lower. The urine was then examined and found to be smoky and to contain a large amount of albumin. The sediment was characteristic of acute nephritis and showed no fatty elements. Since then the temperature had been normal but there had been several slight attacks of dyspnea without definite cause. There had been no vomiting. The skin had acted well. The urine was increasing in amount and was of low specific gravity.

Physical Examination.—The color was good and the arteries normal. The heart was somewhat enlarged to the left and the second aortic sound slightly accentuated. There was an occasional râle in both backs. There was no edema. Examination was otherwise negative.

The urine was somewhat pale and contained a very large amount of albumin. The sediment showed a little normal and abnormal blood, very many small round mononuclear cells, a few leukocytes, many hyalin, fine granular and coarse granular casts and a few brown granular and epithelial casts. There were no fatty elements.

CASE III.—Elise D., six years old, was seen December 6, 1903, in consultation with Dr. Eaton of Lowell. She had always been pretty well. There was no scarlet fever in the neighborhood and there had been no known exposure to scarlet fever. She had a mild sore throat about the tenth of November and was taken care of by Dr. Eaton. The throat did not look like that of scarlet fever and there was no eruption or desquamation. She was up and about in a few days, but did not seem as well as usual. There was nothing very definite, however, and the doctor was not called. The mother noticed that the urine passed during the morning of November 30th was dark. She did not call the doctor as it was all right again in the afternoon. The urine was dark again on December 3d, and the doctor was called the next day. Only 4 ounces were passed during the morning of December 4th. This was dark and found to contain about ½ per cent. of albumin, numerous casts and some leukocytes, but no free blood. The face was puffy and treatment was begun at once. Only 3 ounces were passed on the morning of December 5th, and none up to the time when she was seen at noon, December 6th. The bowels had moved thoroughly, and she had sweat freely. She had complained a good deal of pain in the abdomen and had vomited pretty constantly. The edema had not increased.

Physical Examination.—She was fairly developed and nourished. Pallor was rather marked. She was bright and happy and somewhat excited. There was considerable puffiness of the face, especially about the eyes, but no edema elsewhere. The tongue was considerably coated and rather dry. The tonsils were much enlarged and the throat reddened, but there was no exudation. There was considerable enlargement of the glands on the right side of the neck and a great deal on the left side. The heart was normal except that the second aortic sound was a little the louder. The physical examination was otherwise negative.

CASE IV.—Arthur R., four years old, was seen June 3, 1903, with Dr. Holtzman of Boston. Ten days previously he had had a slight sore throat with much enlargement of the cervical glands, the enlargement of the glands being entirely out of proportion to the soreness of the throat. Cultures showed no Klebs-Löffler bacilli. The temperature was moderate. No rash was seen at any time, although it was carefully sought. There was no desquamation. There was no scarlet fever in the neighborhood and there had been no known exposure to scarlet fever. On June 1st it was noticed that the urine was dark colored and that but little was passed. The urine continued to be brown or red and contained a considerable amount of albumin. The sediment was not examined. There had been no edema except a little about the eyes.

Physical Examination.—He was well developed and nourished and of good color. There was a moderate, discrete enlargement of the cervical glands. The throat was normal, the tongue clean. The upper lids were a little puffy. The heart, lungs, liver, spleen, abdomen and extremities were normal. There was no desquamation anywhere. About 9 ounces of urine had been passed during the morning. The earlier portions were brown, the later reddish.

In the first case there can be no question of any other cause for the nephritis. In the second case it might be said that the nephritis was due to the antitoxin. This is extremely improbable, however, as all the evidence goes to show that antitoxin not only does not cause or aggravate nephritis in diphtheria but tends to prevent its development. The third and fourth cases not having had scarlet fever it might be said that the trouble in them was not tonsilitis but scarlet fever, as it is possible to have scarlet fever without eruption, and, consequently, without desquamation. There was no scarlet fever in the neighborhood in either case, however, and as no one else in either family contracted scarlet fever, this disease can be almost positively excluded.

It is evident from these cases that tonsilitis, whether of a severe or of a mild type, may be the cause of acute inflammation of the kidneys. It is probable that tonsilitis is more often followed by nephritis than is commonly supposed, and it is very likely that in many cases which are considered primary the infection enters through the tonsils, the local manifestations not being severe and having been forgotten. This being so, tonsilitis should not be looked upon, as it usually is, as a simple disease and of but little importance. A disease which can cause acute endocarditis and acute nephritis is certainly one worthy of consideration. The heart and urine in tonsilitis should, therefore, be examined as carefully as in rheumatism or scarlet fever, and the examination kept up for a time during the convalescence.

Acid Creamless Milk in Gastroenteritis.—Since 1897 the most strenuous efforts by intestinal lavage, water, diet, baths, astringents, etc., have been made by Henri de Rothschild (*Le Progrès Medical,* October 24, 1903) and his associates to overcome the gastroenteritis of infants. But in spite of the most devoted care the mortality up to last May was in the neighborhood of 50 per cent. At that time the treatment was changed to milk deprived of cream by centrifuging and acidified by pure cultures of the lactic ferment. From 30 to 60 cc. of this were given at each feeding. The cases treated were those of grave prognosis characterized by very profuse diarrhea, rapid emaciation, bad general condition and high fever. In a remarkably short time the temperature subsided, vomiting ceased, the diarrhea diminished, the stools becoming normal in forty-eight hours in some cases, and the weight of the infant increased. The gain in weight was most noteworthy; other children treated at the same time by the older methods showed a rapid wasting. Out of 14 almost hopeless cases, 13 recovered. The milk was prepared by Tissier and Lanzenberg of the Pasteur Institute.—*Medical News.*

Clinical Memoranda.

A CASE OF TALIPES EQUINOVARUS OPERATED ON BY PROFESSOR LORENZ.*

BY SAMUEL S. ADAMS, A.M., M.D.,
Washington, D. C.

Through the courtesy of Dr. J. Ford Thompson, the surgeon of the Children's Hospital, Washington, D. C., I am permitted to present the boy, whose record is here given. A short time before Professor Lorenz operated on this boy I exhibited him before the Medical Society of the District of Columbia, as the worst case of talipes equinovarus ever treated in our hospital. At that meeting Dr. Thompson explained the several operations he intended to perform, among which was the removal of a wedge of bone from the outer side of each foot. He explained the unpromising features of the case and was doubtful as to a *good* result. The casts and skiagraph (see Figure I.) show the condition of the feet before the Lorenz operation, while the patient himself presents the best evidence of success as he stands and walks on over-corrected feet. In a short time shoes will be fitted and he will leave the hospital.

C. W., ten years of age, male, white, admitted to Children's Hospital, November 15, 1902.

Family history negative.

Previous History.—Labor normal; breast-fed. Dentition normal. Has never had any of the usual diseases of childhood. He has always been a bright, healthy, active child.

History of present illness dates from birth. Exaggerated case of talipes equinovarus.

Present Condition.—General appearance:—Height, very good for age; posture, negative; facial expression intelligent. Form and symmetry of body:—Upper extremities are short, the bones, however, being very well developed. The hands are thick and the fingers are thick and short, being club-shaped. The lower extremities are thick and short, the toes being clubbed. The feet are noticeable chiefly for the very pronounced case of talipes equinovarus. Each foot is turned toward the median line to such a degree that in walking the patient is compelled to raise it quite high in order to prevent it from striking its fellow. The heel is raised so that by a combination of the two contractures he walks on the anterior external portion of each foot, which has greatly thickened the skin on the outer side of each little toe.

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* Read at the meeting of the American Pediatric Society, Washington, D. C., May 12, 13 and 14, 1903.

Other systems all normal.

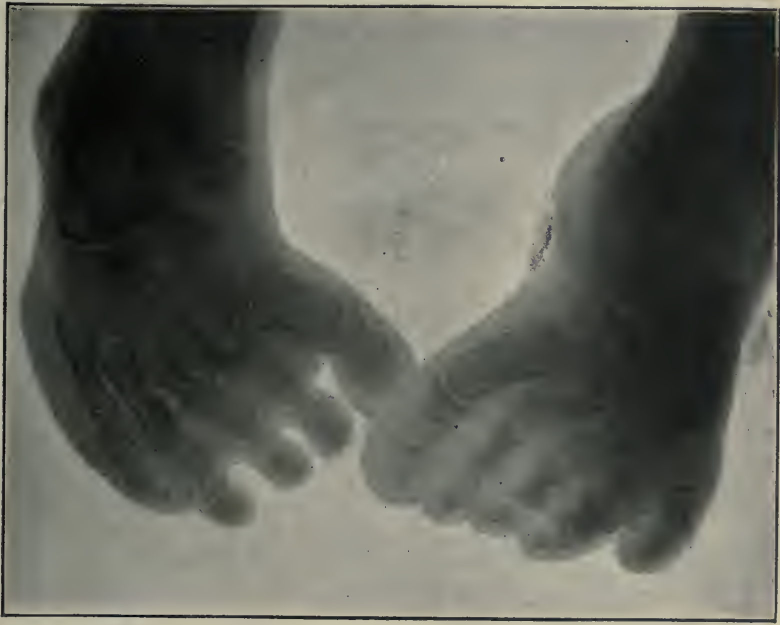

FIG. I.—SKIAGRAPH OF CASE OF TALIPES EQUINOVARUS BEFORE OPERATION.

November 25th.—Patient prepared for operation. Chloroform administered. The tendo Achillis of each foot was severed and the attachments of the muscles on the external surface of the foot were also cut. (The notes are not very clear as to the exact character of this operation.)

December 5th.—Patient prepared for the operation which was performed by Professor Lorenz at the Providence Hospital. The attachments of the ligaments were destroyed by manipulation. Each foot was restored to an over-corrected position and covered with thick coats of cotton and plaster of paris.

December 5th.—Patient returned to the hospital after the operation suffering much pain. Morphin sulphate gr. ⅛ was given hypodermatically. He slept very well during the night.

December 6th.—Pulse is weak toward morning and strychnin sulphate gr. $^1/_{100}$ and whiskey ʒiv were given every three hours. Patient suffered much pain in the morning and evening. In each instance morphin was given hypodermatically.

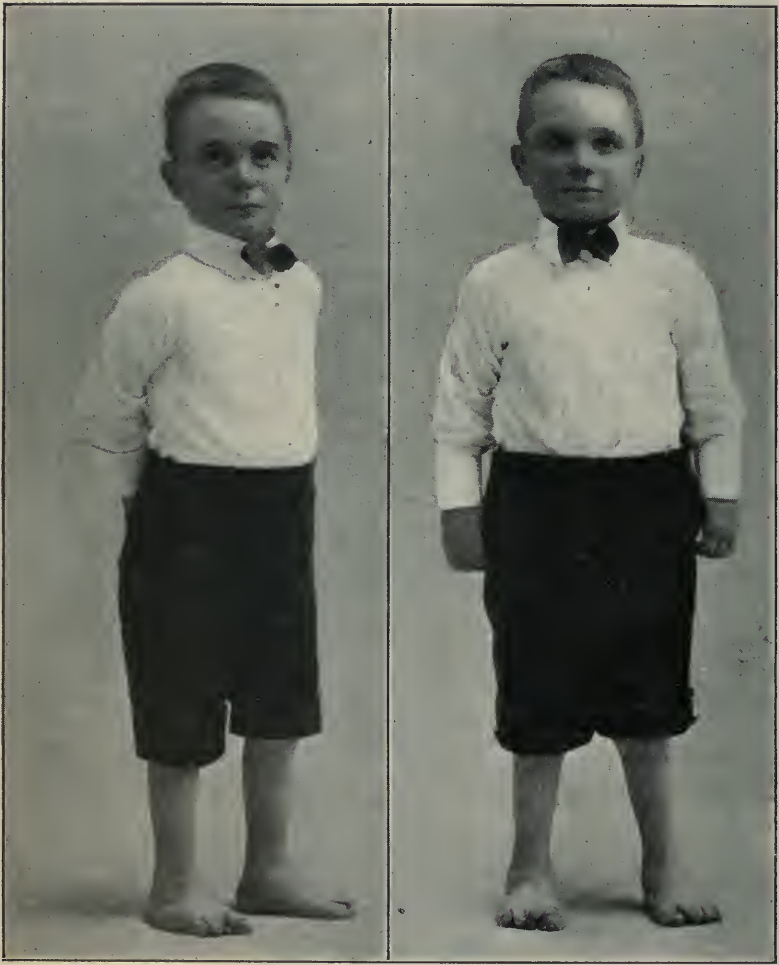

FIG. II.—PHOTOGRAPHS OF BOY FOURTEEN MONTHS AFTER OPERATION.

December 7th.—Patient slept only after hypodermics of morphin, which were given at 1:30 A.M., 3 P.M. and 10:45 P.M. At times his suffering was intense.

December 8th.—Pulse weak and irregular. Stimulants improved this condition somewhat. Patient suffered greatly. Morphin given at 1 P.M. and 8:50 P.M. Patient enjoys his milk, taking full amount.

December 9th.—Morphin administered at 7:25 A.M. and 1:30 P.M.

December 10th.—Pulse weak and irregular. Responded to stimulants. Morphin at 1:30 A.M., 1 P.M. and 8 P.M.

December 11th.—Patient still suffers greatly. Morphin (gr. ⅛) at 11 A.M and 11 P.M.

December 12th.—Patient rested better. Morphin at 6 P.M.

December 15th.—Suffered very little. Not necessary to give morphin. Regular diet. Pulse much stronger. Appetite splendid.

December 19th.—Allowed to get up in rolling-chair. Does not complain of pain.

January 1st.—Improving. Suffers no pain.

February 1st.—Walks a little with assistance.

February 6th.—Is able to walk without assistance.

February 25th.—Walks much better.

March 1st.—Walks well.

May 1st.—Casts removed. Feet found to be in normal condition.

For a week afterward he complained of soreness of the soles of his feet. He had some difficulty in walking, but in ten days he was walking without assistance and has steadily improved.

I present herewith photographs of this boy (see Figure II.), which were taken fourteen months after the operation. He walks well, but the foot is still very flat.

DISCUSSION.

Dr. Adams.—The treatment required was about twenty minutes with both feet. He has worn a plaster cast for three months. No cutting was done. The point where the tenotomy had been performed ruptured and bled a little from the tendo Achillis. The operation was simply manual. You will notice that there is some over-correction. Dr. Lorenz preferred to put on the cast and have over-correction. The subsequent treatment will be that he will be put in a cast and remain that way for several months longer, and I think at the end of a year a shoe will be fitted to him, a scientifically constructed shoe.

DR. ROTCH.—I have at present the medical care of one of Dr. Lorenz's cases, a congenital hip, which has been in plaster for seventeen or eighteen weeks. When the patient first came under my care she had scarlet fever and we had to take the cast off in order to see the condition of the skin under it; she will have to be kept in the cast for perhaps two or three months more. It is a little girl about twelve years old. In this case of scarlet fever the skin under the cast looked very well.

DR. ADAMS.—When the cast which was on this child was taken off the callous which was on there peeled off and there is practically new skin. Oil was first put upon his feet, then scrubbed off with soda to get the skin in good condition before putting on another cast, but it is the intention of Dr. Thompson to put the cast back as directed by Dr. Lorenz. He will stay in that cast for the rest of the year and then have shoes put on. The most remarkable thing was that this boy could walk about with the casts on as if nothing were wrong with him at all, and before the operation he was always falling about.

Insanity in Children.—Crawford (*Med. Age,* March 25, 1903) believes that insanity in childhood generally develops between the ages of seven and seventeen. It may develop in the form of paranoia, melancholia or acute and active delirium. Langdon Down classifies mental diseases in children as congenital idiocy, developmental idiocy, acquired or accidental idiocy, cretinism, backwardness, and syphilitic idiocy. Undoubtedly the majority of cases occurring in children can be classed under developmental idiocy, the term "idiocy" being used in the broad sense of intellectual feebleness. The suicidal mania is becoming more frequent, and in France 21 per cent. of the suicides are children between five and twelve years of age. Children engaged in labor are less liable to any form of insanity than those who are constantly in school or read the cheap novels of an exciting type. It is at times difficult to decide the border line between hysteria and insanity. Clear-cut cases of insanity are rare, and it is necessary to take into consideration the other manifestations of hysteria in deciding this question, such as Charcot's diagnostic points of hemianesthesia, affections of sight, and the effect of esthesiogenic agents upon sensibility and motility. There may be a considerable amount of hysteria mixed in with insanity, and when this does occur it makes the case doubly puzzling. In the management of these cases the physician should first gain the confidence of the child by a quiet yet persistently friendly demeanor. It is better to ask straightforward questions and expect equally candid replies. It is better to avoid all appearance of sternness, and punishment is needed only in children of a vicious hysteroid character.—*International Medical Magazine.*

A CASE OF INFANTILE MYXEDEMA.*

BY GEORGE N. ACKER, M.D.,
Washington, D. C.

M. V., aged two years and ten months, female, white, entered my service at the Children's Hospital, Washington, D. C., February 4, 1903, with the following history:—

Her mother and father are living and in good health. She is the only child, born after a normal labor. She was breast-fed for sixteen months. About the fourth month she cut four upper incisors and about the eighth month the four lower incisors. She had no more teeth until the eighteenth month, when the anterior molars and canines appeared. She began to sit up at the sixth month and commenced to talk at the ninth month. When eighteen months old she could walk short distances, and make sentences of a few words. She was a fine looking, healthy child. At that time she had an attack of diphtheria, for the treatment of which antitoxin was employed. Her general appearance began to change after recovery from the disease, but it was six months before any great change was noticed. It was then observed that the face was swollen, the skin thickened, the upper teeth decayed, and bronchial wheezing was marked. For two weeks before she entered the hospital she did not recognize her mother.

She had ceased to grow in height, but her weight greatly increased during the past year.

Condition on Examination.—"The skin is very firm and thickened, the arms and legs appear hypertrophied. The chest is round and the abdomen is distended. There are masses of subcutaneous fat about the clavicles. The anterior fontanel is slightly open. The nose is flat. The hair is straight and dry. The tongue is large, broad, flabby, and appears too large for the mouth. The appetite is fair and the bowels costive. The thyroid gland cannot be felt. She has a slight cough, and examination of the lungs shows a few mucous râles. The heart is normal; pulse 120 per minute. The child is dull and listless. There is evident lack of intelligence. She does not talk, nor in any way express her wants. She does not walk. Sensation is good. There is involuntary micturition."

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* Read at the meeting of the American Pediatric Society, Washington, D. C., May 12, 13 and 14, 1903.

Treatment.—She was ordered ½ grain of thyroid extract three times daily, and in four days this was increased to a grain. This was continued for two weeks when 1½ grains were given. On these small doses, which were given on account of high pulse rate and bronchitis, the child made a marked improvement and lost weight rapidly.

February 20th it was noted that she was brighter, less irritable and played with her toys. From this date until the middle of March she took 3 grains of the extract three times daily. She had a severe attack of influenza from the middle of March to the middle of April, with a discharge from the left ear, and during this illness the thyroid extract was reduced to 1 grain three times a day. The patient's condition was so greatly changed for the better that it was recorded on April 8th that her appearance was nearly normal. The face had lost its bloated appearance; the expression was brighter and intelligence much increased.

When with her mother she spoke a few words. For some weeks she passed urine voluntarily. Her weight was 23 pounds and 6 ounces, and her height 30 inches. During July and August the child was taken to the seashore. The medicine was continued in 1 grain doses, three times daily, until January 21, 1904, when, on account of an attack of influenza with high fever, it was discontinued for a week. In the early part of March, 1904, the patient had the chickenpox from which she made a good recovery.

March 28, 1904. Since the child has been under treatment she has taken on the average 1 grain of thyroid extract three times a day, and there has been a wonderful change in her condition. She appears to be a bright, healthy child, plays with the other children in the ward and enjoys life. Her skin is soft and pliable. She walks about and talks, but not as well as a child of her age should do. The digestive and genitourinary systems are in a good condition. The fontanel is closed. Her face has an intelligent expression, and the nose has lost its flat appearance. Her weight is 35½ pounds and height 35 inches. She has gained about 7 inches since her admission to the hospital.

DISCUSSION.

Dr. Koplik.—The Society may be interested in the subsequent history of a case I reported a number of years ago. Among the first cases I published was a child nineteen months of age when brought under my observation. It was of the myxedematous type. I continued my treatment, although the girl never became so bright as other children of her age, until she was about seven years old. She was then brought to me with the query as to whether the medicine should be continued. The child was fairly bright and went to school. I discontinued the thyroids and it was not more than a month before the symptoms of myxedema reappeared, but in a more aggravated form than when I first saw the case. There were great masses of fat over the clavicles and the appearance was that of a very marked cretin. The child was very stupid and, of course, had to return to thyroids again. This proves that these little unfortunates are not cured permanently by thyroids. They must be kept under constant observation.

As to the administration of the thyroid, it is astonishing to see what large quantities children can stand, if the thyroid preparation is absolutely pure. Gregor, in a recent publication, has attempted to find out how much thyroid extract a baby could tolerate. He administered large doses, as much as 150 grains a day to a child three years of age, without any ill effect, and he concluded that, if there is a rise in temperature after the administration of thyroid tablets or extract, we should consider that our preparation is not absolutely pure. In the early days of the administration of thyroid extract there was a marked toxemia due to impurities and toxins in the thyroid extracts which at that time were frequently made from raw glands, partly decomposed.

DR. ROTCH.—In Boston we stop our treatment when we get a rise in temperature. The quantity of the thryroid to be administered is an important thing. If the preparations are not pure we should not give them.

DR. COTTON.—I should like to know whether it is the experience of others, in using the thyroid treatment in a myxedematous condition, that they have observed a greater tendency to ordinary infections, such as acute coryza or influenza? In a number of cases that I have handled I have found that a prolonged use of the thyroid improved the general physical condition but increased susceptibility to incurring infections; so that the child, who had been absolutely free from any disturbances whatever, except this one of development, became a very delicate and sensitive child. I reported some of these cases several years ago.

DR. BLACKADER.—Is the thyroid gland palpable here?

DR. ACKER.—No; it is not. A great improvement has taken place in this child. She is mentally brighter; the tongue is smaller and the hair is less dry; she walks now by herself, and has lost the puffy condition of the skin; the bridge of the nose is much better; and the skin and muscles have a normal feel.

A CASE OF INTUSSUSCEPTION IN AN INFANT EIGHT MONTHS OLD; OPERATION AND RECOVERY.*

In the Service of Dr. Robert G. LeConte in the Children's Hospital of Philadelphia.

BY HOWARD KENNEDY HILL, M.D., RESIDENT PHYSICIAN.

George S., aged eight months, was born in Philadelphia (June 25, 1903), of Russian parents. He was admitted to the Children's Hospital on February 25, 1904, at 2:30 P.M., and was operated upon at 3:45 P.M.

Family History.—The father (aged thirty-five) and mother (aged twenty-four) are both living and well. They have two other children, both well. The mother has had no miscarriages. There is no history of tuberculosis, rheumatism or venereal trouble.

Previous Medical History.—The child was born after a normal labor at term. He weighed thirteen pounds at birth. He was exclusively breast-fed until brought to the dispensary, when he was given a modified milk mixture in addition. He has had no previous illnesses.

Present Illness.—Seven weeks ago, the child had cramps and colic with other signs of gastroenteritis. He vomited at this time after each feeding, but there was not any blood in the vomitus. His bowels were loose and contained a little blood at times, with curds and mucus. He was taken to five physicians in four weeks.

On January 25, 1904, he was brought to the medical dispensary of the Children's Hospital, with a history of constipation and gastroenteritis. He was put on whey and did well for a week. His stools became thin and greenish in color, very foul and contained mucus but no curds. He did not vomit. A week later he seemed improved, but his mother did not persist in feeding as instructed (modified milk—fat 3.5 per cent.; sugar 4 per cent.; proteid 0.5 per cent.) which caused him to have seven or eight greenish and slimy stools daily, and to refuse his bottle entirely.

For two weeks prior to admission, the mother took the child to an outside physician. The bowels were still loose and blood was noticed, in addition to the mucus, during the second week. The night before admission he vomited blood for the first time and there was noted a prolapse of part of the bowels four inches in length, which was reduced and held in place by adhesive plaster. The following morning, the vomitus was again blood streaked. The attending physician, Dr. Rovno, made a diagnosis of probable intussusception and sent the child immediately to the hospital.

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* Read before the Philadelphia Pediatric Society, March 8, 1904.

Physical Examination.—The infant was thin and not well nourished. His abdominal wall was flaccid and had evidently been more distended, as shown by the wrinkles in the skin. A mass was distinctly felt in the left iliac region. It was movable, rather hard and sausage-shaped. On rectal examination, the lower end of the intussusceptum was felt about three inches from the anus. On removing the finger, a large amount of bloody mucus followed. The child urinated during the examination. The heart and lungs were normal. There were rather marked signs of rachitis. A blood count, made before the operation, showed hemoglobin 90 per cent.; red blood corpuscles 5,270,000; white blood corpuscles 20,160. The result of another count, made twenty-four hours later was:—hemoglobin 90 per cent.; red blood corpuscles 4,160,000; white blood corpuscles 13,380.

Dr. LeConte performed the operation, under chloroform, the child standing it well. When relaxed under the anesthetic, the classic, sausage-shaped tumor was easily felt and outlined in the left inguinal and iliac regions, in the situation of the sigmoid flexure. There was no prolapse through the anus of the invaginated portion of the intestine.

The incision was made in the median line, two inches in length, between the umbilicus and the symphysis pubis. The mass was very movable and very slippery, but when brought out of the wound into view, was easily reduced by gradual and ascending pressure at a point corresponding to the lower end of the inside mass. The cecum, with its appendix, was invaginated into the large intestine for at least a foot and a half, this being possible only through the extraordinary length of the mesenteric attachment of the cecum, ileum and ascending colon. It was about nine inches long. The whole mass, composed of three thicknesses of bowel, was therefore at least five feet in length, about as long as the entire large intestine. The cecum was the last portion to be reduced, and this required a little more effort, owing to a hard, rounded mass within the bowel, just at the base of the appendix, possibly a papilloma or a small lump of feces, which, however, did not yield to manipulation and was not removed. The appendix was 5 cm. in length, the meso-appendix extending very nearly to the tip. The mesentery and the intestines were greatly congested, especially the portions which had been invaginated. There were no signs of gangrene. The cecum was attached to the peritoneum of the anterior abdominal wall by a single suture of black silk to the right side of the wound, to preclude any possibility of recurrence of the intussusception. The wound was closed by a continuous cat-gut suture through the fascia and through-and-through sutures of silk-worm gut. There was no drainage. The operation lasted sixteen minutes. Toward the end of the operation, a hypodermic injection of tincture digitalis min. 1 and strychnin sulphate gr. $^1/_{200}$, was given. As the child was about to be carried to his bed, he developed marked tonic spasms of the muscles of the arms and neck and became cyanosed. The eyes rolled upward, the pulse was full and slow and the respirations were shallow and slow. The child soon relaxed and resumed normal color and functions.

The mother was instructed to use the breast pump for the next twenty-four hours, and then to return to nurse the child every third hour from 7 A.M. to 10 P.M. In the meantime, albumen water (fʒj) was given every hour by mouth and malted milk (℥ii in f℥ii water) every fourth hour by rectum. After the first two injections, the latter was retained.

During the first evening, the child regurgitated twice, had five bowel movements, the stools being of a bloody mucus character, and passed urine three times. He slept soundly, after some tossing about in the early evening.

The temperature, pulse and respirations on admission were $98\frac{4}{5}$, 128 and 36. The shock of the operation caused a slight drop to $97\frac{3}{5}$, 124 and 32, which in six hours had reached $101\frac{4}{5}$, 156 and 58.

On the day after the operation, his stools, two in number, were dark brown in color and contained some mucus, but no blood, and three nutritive enemata were followed by a discharge of brownish fluid with some mucus. He regurgitated twice after being breast-fed in the afternoon and evening. During the night malted milk was given at 1 A.M. and 5 A.M. by mouth.

On the 27th the child had two loose brown stools and did not regurgitate at all. His urine was passed very freely. A specimen was examined, showing neither albumin, sugar, nor leukocytes, but many urates, uric acid crystals and a few hyalogranular casts.

On the 28th, the temperature reached normal and the child was very quiet. His pulse was rather slow, at one time (6:15 P.M.) being only 86. He rested well all night. The next day he regurgitated once and vomited once (at midnight), but he seemed to be comfortable at other times. He had four loose brown stools on the 28th and three on the 29th.

The next two days were uneventful. The stools became loose, yellow in character, containing a little mucus.

On the 2d of March the child had an attack of colic, lasting nearly an hour. He had five stools, which were soft and yellow, with mucus and curds in the last two.

At noon on the 3d of March the stitches were removed by Dr. LeConte. The wound was clean and healing by first intention. The mother stopped nursing the child on this day, because of diminished quantity and poor quality of her milk. He was given a modified milk mixture (3-6-1) using lime-water and barley-water as a diluent, instead of distilled water. This mixture agreed perfectly.

The next three days were uneventful. A specimen of a stool, examined on the 6th of March showed no trace of hematin crystals.

Today (March the 8th and the thirteenth day in the hospital) the wound was dressed and found to be entirely united. The blood count showed 13,120 leukocytes. The child was discharged at 11 o'clock.

Death under Nitrous Oxid. — At a meeting of the British Society of Anesthetists, November 6, 1903, this case was reported by Mr. Norman Bennett. The patient, a youth aged seventeen, suffering from enlarged cervical glands, had twice before had "gas," once being seriously troubled in respiration. Upon the last occasion gas and air were administered for extraction of teeth. The facepiece was removed before stertor occurred, but the patient became more cyanosed, and ceased to breathe. The necropsy showed that there were enlarged lymphomatous glands in various parts of the body, and that the diameter of the trachea was reduced by one-half, while the heart muscle was degenerated.—*British Medical Journal.*

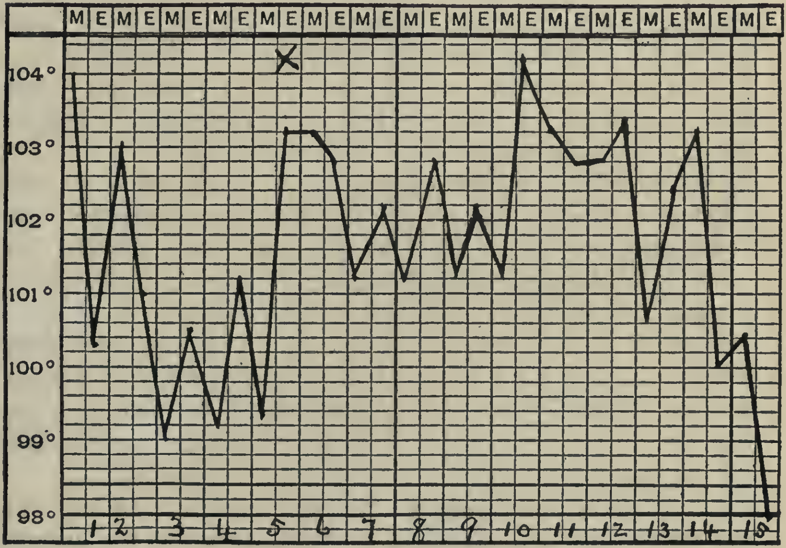
TWO CASES OF APPENDICITIS IN YOUNG CHILDREN.

BY JOHN HOWLAND, M.D.,
New York.

Appendicitis in children under two years of age while not a rarity is a decidedly uncommon condition, and on account of this infrequency is not often carefully enough considered in the presence of an obscure illness in a young child. Three factors combine to make the diagnosis difficult: (1) that this disease in children runs, as a rule, a different course from that in adults, more insidious, with fewer positive symptoms and a greater liability to lead to the rapid development of general septic peritonitis with little previous warning; (2) that acute digestive disturbances with fever are so frequent in the young, and occur with such severe symptoms, that we readily incline toward them as being the most probable condition; (3) that with very young patients we must rely entirely upon objective symptoms, their subjective symptoms being often unreliable and misleading.

CASE I.—ACUTE APPENDICITIS. OPERATION ON THE FIFTH DAY. PROLONGED TEMPERATURE. COLITIS. CARDIAC DEPRESSION. RECOVERY.

Baby S., twenty-two months old, a perfectly healthy child until two months before. He then had an attack of bronchopneumonia from which he had recovered sufficiently to be out once or twice. He was seen first on December 1, 1903. The day before he had been absolutely well but at 1:30 in the morning he vomited milk, none having been taken since six o'clock the previous evening. He vomited again at 8 A.M., following his usual feeding of milk. His temperature was 104°F., but after evacuation of the bowels by calomel fell to 101.3°F. in the evening. He complained of pain, putting his hands upon his abdomen and crying, and he took very little food during the day. On account of the pain an acute inflammatory process in the abdomen was suspected and he was carefully examined for it. No tenderness was apparent, there was no abdominal rigidity and nothing abnormal could be felt. He passed a fairly good night though he slept restlessly. In the morning he took broth well. As will be seen from the temperature chart the next morning the temperature had risen and he still complained of abdominal pain. There was by this time abdominal rigidity low down on the right side and it seemed that a small induration could be felt when he inspired deeply. A consultation was held with both a physician and a surgeon and while it was believed that the child was suffering from appendicitis, in view of the fact that he had recovered so recently from pneumonia and that the diagnosis was a little obscure, it was deemed best to defer operation for a time and watch his temperature and general condition, hoping that it might be possible to postpone matters and operate in the interval, when the danger of a fresh pneumonia would not be so great. His temperature began to fall and fell continuously to 101°F., his bowels moved once or twice following an enema, he slept and took nourishment well, so it was thought best not to operate.



CASE I.—ACUTE APPENDICITIS; OPERATION ON FIFTH DAY; RECOVERY.

The following days, the third and fourth of his illness, he seemed much better in every respect; from his appearance no one would have thought him really sick. He was hungry, complained of no pain, sat up in bed and played with his toys all day and his temperature continued low. The abdominal rigidity, however, persisted though no induration could be felt. He had several rather frequent small, green stools with a little mucus.

On the fifth day of his attack he did not look so well in the morning, he was paler than before, but was sitting up in bed and taking nourishment well. It was impossible to make a satisfactory examination of the abdomen, but in the afternoon a distinct indurated mass was felt low down on the right side and his temperature had risen. Immediate operation was decided upon and two hours later performed. During these two hours the temperature had risen two more degrees and the child was much prostrated, lying down and paying no attention to anything.

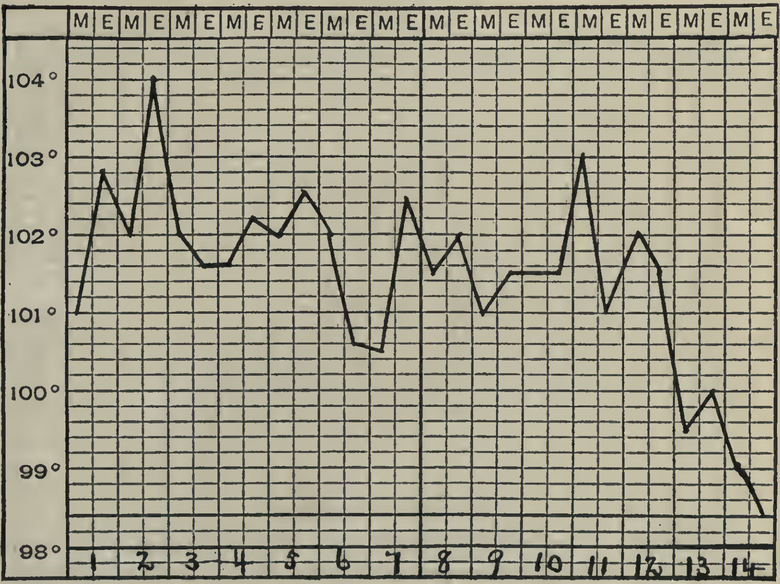
The operation showed a well walled-off appendicular abscess containing about 1½ ounces of foul pus. The appendix was perforated at its base and the cecum was very friable.

He stood the operation fairly well. For the next six days the child was desperately sick, being, as is often the case with children, profoundly affected by the shock of operation. His temperature was high and one small collection of pus formed. Shortly after the operation he began to have frequent small, green stools with much mucus, as many as eight a day, making feeding difficult. It was hard to decide whether the persistent temperature was entirely due to the appendicitis or whether the colitis was also partly responsible. It became necessary to feed whey and broth and to restrain his movements by codein.

The wound progressed most satisfactorily and on the ninth day the temperature fell rapidly. Shortly after this his pulse became very weak, irregular and intermittent, and he had two attacks of heart failure that nearly proved fatal and were only overcome by free stimulation including strychnia hypodermically. A third attack a few hours later was much less severe, though alarming. During the period of great cardiac depression he became exceedingly restless and irritable and was controlled with the greatest difficulty; morphin sulphate, gr. $^1/_{50}$ was used hypodermically on several occasions. For five or six days his heart action was very irregular, the first sound in muscular quality and the return to a normal condition was very slow. It was possible that this cardiac weakness was due to a necessarily insufficient quantity of food given on account of his colitis. Diluted milk fully peptonized and scalded was added to the dietary and was well borne; thereafter his convalescence was rapid and uninterrupted.

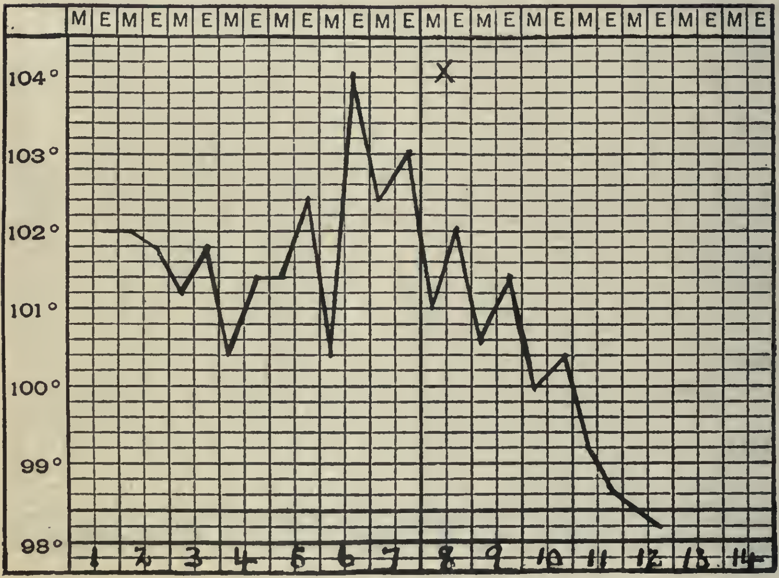
CASE II.—RECURRENT ATTACKS OF APPENDICITIS. FIRST ATTACK UNRECOGNIZED. OPERATION DURING THE SECOND ATTACK. ABSCESS. RECOVERY.

F. D., twenty-two months old. A strong, healthy child, was treated in the summer of 1902 for a prolonged attack of intestinal indigestion. It was necessary to wean him at that time. Following this until September, 1903, he was well. He had had hardly any digestive disturbance, had gained in weight rapidly, and was a large, well-developed child. In September, 1903, he ran a temperature for two weeks accompanied by much abdominal pain of which he complained constantly. (See chart No. 1, Case II.) There was vomiting at the beginning of the attack, but only once or twice thereafter. There was much prostration and he was very peevish, crying most of the time. The stools throughout, while not perfect were quite good, were not more than three or four a day and were well digested. I saw him first when he had been sick five days and on account of the apparent incessant pain and the high temperature, in the absence of more intestinal symptoms, was suspicious of appendicitis, but



CASE II., CHART I—APPENDICITIS UNRECOGNIZED.

I was unable to obtain the slightest evidence of this condition; there was no abdominal rigidity, no tenderness, and nothing could be felt through the abdomen or per rectum. A blood count was reported to show no leukocytosis. A surgeon saw the case in consultation and considered it infantile typhoid. I saw him again ten days later and his temperature was normal for the first time. Abdominal examination was again negative. Convalescence was uninterrupted from this time on though very slow. He remained pale, flabby, and it was not until February that he recovered his appetite, though he had grown rapidly. His mother said that after he was up and about, although very active and playing around, he would often sit down on the floor and grasp his abdomen complaining of pain which would pass off in a short time.



Case II., Chart 2—RECURRENT APPENDICITIS; OPERATION ON EIGHTH DAY. RECOVERY.

On March 6, 1904, I saw him again when he had been ill exactly one week. The onset had been with severe abdominal pain which lasted four or five hours and was followed by vomiting and an elevation of temperature. (Chart No. 2, Case II.) There was no subsequent vomiting. The stools had been one to four a day and well digested and I saw two that were both small and nearly normal. During the whole week he had complained constantly of abdominal pain, screaming out and only sleeping a few minutes at a time. He had had considerable gas in his bowels and each expulsion of this had relieved him but still there was much pain independent of the gas. After a physical examination there was no doubt of the diagnosis; there was marked rigidity and tenderness over the right lower abdominal quadrant and in the iliac fossa, low down on the right side, a distinct induration could be felt. Leukocytes 17,000.

An immediate operation was advised and this was performed. Behind the cecum situated extraperitoneally a couple of ounces of pus were found around a much diseased appendix; this was removed and the cavity drained. The child stood the operation well, the temperature fell the next day and although there was some difficulty for the first few days with feeding, and a little vomiting, he made a rapid recovery.

One cannot draw conclusions or formulate rules from 2 cases but the second one of these is very instructive. We can hardly doubt that the first attack described was one of true appendicitis, and yet there was not the least sign of it to be obtained by abdominal or rectal examination. It could be suspected only, yet with the well-known tendency of appendicitis in very young children to set up general septic peritonitis such a case demands the closest watching, in order that the first symptoms of peritoneal invasion may be recognized. The initial vomiting, the temperature and the evident pain, in the absence of evidence of intestinal disease, the stools being so nearly normal, gave a most important clue to the diagnosis, and with such symptoms appendicitis should always be thought of and kept in mind constantly until it can be absolutely excluded.

The Action of Chlorid of Sodium on the Renal Epithelium.—Castaigne and Rathery (*Med. Press,* September 30, 1903) have ascertained from experiments that persons with susceptible kidneys, or who are suffering from interstitial nephritis, develop transient albuminuria under the influence of excessive doses of salt, and any pre-existing edema and albuminuria in such persons are accentuated thereby. In massive doses salt determines uremic coma, followed by death. The deleterious action of the salt appears to be purely mechanical, being due to injurious osmotic processes.—*International Medical Magazine.*

ARCHIVES OF PEDIATRICS.

MAY, 1904.

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SOME CLINICAL FEATURES OF TRACHOMA.

The following contribution is written not so much with the idea of advancing any new theories in regard to this well-known disease as with the intention of emphasizing some facts already understood, and of detailing some features observed in the hospitals established for the treatment of trachoma by the Department of Health of New York.

ETIOLOGY.—There seems to be no doubt as to the contagious character of this disease and also as to certain racial and probably personal predispositions. Contagious, through the medium of the atmosphere, trachoma most certainly is not, but it is equally certain that it is contagious to a fairly marked degree through the medium of the secretion. In the service of the Trachoma Hospital at Gouverneur Slip, four physicians and five nurses contracted the disease in spite of all known precautions. On the other hand it must be admitted that the entrance of trachomatous secretion into a healthy eye does not necessarily result in trachoma. It may be devoid of result, or a catarrhal conjunctivitis may ensue. In regard to racial predisposition, it is well known that Hebrews and Irish are especially liable to trachoma. The negro is, by many authors, stated to be practically exempt. This is certainly not true in institutions in this climate, although the admixture of a certain amount of white blood in these cases, may have diminished the negro's natural immunity.

I have stated that the poison of the disease seems to be fairly contagious. I do not consider it especially virulent, which I think accounts for the fact that one eye will sometimes exhibit trachoma and the other not, although, if these cases be followed, the second eye will, generally speaking, show evidences of the disease at a later period.

SYMPTOMS.—As we see trachoma in this city it is almost always a chronic affection, interrupted by acute exacerbations. Its inception is, however, fairly acute and is accompanied by lacrymation, injection of the ocular conjunctiva, and often by slight ptosis. At the onset it is frequently unilateral and may remain so for a considerable period. A persistent unilateral conjunctivitis accompanied by a watery, rather than a mucopurulent, discharge is exceedingly suspicious of beginning trachoma. Within a few days small follicles may be distinguished especially in the lower cul-de-sac. Later, the irritation gradually subsides, the disease takes on a chronic character and its true features become apparent. In the opinion of the physicians at the Trachoma Hospital two things are necessary for the diagnosis of trachoma at the commencement of what may be termed its quiescent stage, *i.e.,* the presence of follicles (the trachoma granules) and the presence of hypertrophy of the mucous membrane.

Diagnosis.—The disease with which trachoma is apt to be confounded is follicular conjunctivitis. The follicles of follicular conjunctivitis, so far as I have been able to observe, rarely, if ever, involve the upper lid. They are small, situated in parallel rows in the lower lid and are unaccompanied by conjunctival hypertrophy. Clinically the follicles of trachoma are of two kinds, large and soft, and small and hard. As a matter of fact both kinds will be found in any case examined microscopically, but either may predominate clinically, and so give a sort of type to the disease. The soft follicles are superficial; the hard, deep, and it is to the presence of follicles deep in its substance that the conjunctival hypertrophy is due. In the earlier stages the deep-seated follicles are best observed in the conjunctiva covering the tarsus of the upper lid, where they appear as small yellowish bodies. As in this situation there is no submucous tissue conjunctival hypertrophy does not interfere with their observation. In the lower lid, where submucous tissue is abundant, hypertrophy is early manifest by the reduplication of the conjunctiva, and hypertrophied tissue is also early to be observed in the upper lid where the conjunctiva leaves the cartilage. If, in the beginning, the follicles be superficial, they will for some time be present without marked hypertrophy; if deep at the commencement, the membrane will be hypertrophic and velvety in appearance and follicles will not be visible. The former state of affairs is most usually the case and it follows, therefore, that in the quiescent stage, the early diagnosis may be difficult, a few follicles in the lower lid unaccompanied by hypertrophy not sufficing for the diagnosis of trachoma. If, however, in such a case, we evert the upper lid and find small deep-seated follicles studding the conjunctiva of the tarsus, we may, in my opinion, be certain that trachoma is the disease with which we have to deal.

The Treatment of trachoma during acute exacerbations is best conducted by some one of the silver salts. Argyrol in 20 per cent. solution has seemed to me most generally serviceable. When the disease is quiescent it may be attacked by local applications, or by surgical procedures. Of the local applications the sulphate of copper pencil is, in my opinion, the best. In about ten thousand cases treated at the Department of Health's Trachoma Hospital it proved to be greatly superior to either bichlorid of mercury or formalin. With the two latter, it seemed to me that such results as were obtained were due solely to the friction employed. The results of treatment by the sulphate of copper crayon, it may be added, are often exceedingly good, particularly in cases presenting a preponderance of large superficial granules. This treatment is, of course, tedious and painful, and cocain does not seem to alleviate the smarting to any marked degree. In regard to surgical procedures, I am in favor of simple expression without previous scarification, and, judging from the results of about six thousand cases treated by operation, I believe that Knapp's roller forceps is the best instrument to employ. When the follicles are superficial Noyes' or Prince's forceps answer the purpose very well, but when deeply-seated the stripping action of these instruments necessitates too much traumatism and is not to be compared to the vertical pressure of the Knapp instrument. Knapp's forceps are somewhat more difficult of manipulation than those of Noyes and Prince, and are not so readily used in the canthi. In the latter situation, however, the follicles are superficial and the Prince forceps can be used to complete the operation. The immediate after treatment is best conducted by the early removal of the bandage and the use of ice cloths. In the service of the Department of Health the present custom is to remove the bandage at the end of a few hours. The continuance of the bandage for twenty-four hours increases the tenacity of the resulting adhesions. Adhesions should be separated daily with a probe until their tendency to reform shall have ceased. It must be recognized that it is not always possible to prevent some slight permanent agglutinations between the folds of conjunctiva which have been denuded of their epithelium. If, however, the conjunctiva has not been torn during the operation, a slight adhesion of this kind will do no practical harm. The result of operative treatment depends largely upon the patience and thoroughness of the operator, and the more thorough he is in removing the granules, the greater is apt to be the subsequent reaction and the more numerous and persistent the adhesions in a difficult case. The point of primary importance, however, is to remove the granules; reaction can be subsequently combated. After reaction has subsided, any follicles remaining are to be treated by sulphate of copper, and this treatment should not be discontinued until conjuncival hypertrophy shall have disappeared.

HERBERT WRIGHT WOOTTON.

THE AMERICAN PEDIATRIC SOCIETY.

Dr. A. Caillé, the president of the Society, has issued a circular letter stating that the next meeting will be held in Detroit, Mich., May 30 and 31, and June 1, 1904. The Council having failed to arrange a program, the members are urged to send the titles of their papers to the secretary, Dr. S. S. Adams, as early as possible. Through the efficient aid of Dr. C. G. Jennings, of Detroit, the meeting promises to be one of many social features, which will in no way interfere with the scientific work of the sessions.

Action of Diphtheria Toxin upon Circulation. — According to K. R. v. Stejskal (*Zeitsch. f. klin. Med.,* Vol. LI., Nos. 1 and 2) the poison of diphtheria acts upon the vessels as well as the heart. With the latter there is first an irritation and then a paralysis and general disturbance of the nervous mechanism; with the former a decrease in tensions developing to a complete paralysis, takes place. Both actions are simultaneous and independent of each other. The period of latency and degree of toxicity depend upon the size of the dose and also upon the individual resistance of the animal. If an animal is in poor condition, a normally non-toxic dose, will readily kill. The vasomotor paralysis will only react upon the heart to a slight degree in that the coronary vessels are less filled with blood; the anemia of the respiratory centre is, however, of more important consequence than that of the heart muscle.—*Medical News.*

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The International Medical Annual. A Year Book of Treatment and Practitioner's Index. By thirty-two contributors. Twenty-second year. Pp. xi.-770. New York: E. B. Treat & Co. 1904. Price, $3.00.

The Medical Annual introduces the subject of therapeutic progress in a short review by Drs. Stockman and Charteris. Organotherapy is considered to be very much in the background.

Serumtherapy is a branch of therapeutics still on trial. Moser claims to have had good results in scarlatina by the use of a serum obtained from streptococci from the heart blood of fatal cases. Moser believes that he shortened the course of the disease and that convalescence occurred much sooner when he used this treatment, and his claims are borne out by Popischill. Both Baginsky and Moser find Marmoreck's serum useless in scarlet fever. Baginsky is favorably impressed by a new serum prepared by Aronson who exalts the virulence of the streptococci. Menzer points out that the effect of serum in streptococcic conditions is antibacterial not antitoxic. In typhoid fever in children Josias reports favorably of Chantemesse's serum.

Dr. G. F. Still is editor of the sections relating to the diseases of children. He advocates a more careful inspection of dairies and the use of pure, raw milk in infant feeding. In a brief paragraph on tuberculous peritonitis he states that in England the much vaunted success of laparotomy is being more and more discredited.

The Medical Annual improves each year.

The Anti-Tuberculous Vaccination of Nursing Infants.—M. Behring and M. Hericourt (*Jour. des Practiciens,* April 23, 1903), proposes to immunize infants by feeding them on milk taken from cows that have been vaccinated against tuberculosis, old bacillus cultures of human origin having been injected in small doses in young animals. Experimentation has shown that animals so treated are absolutely immune. There is, of course, no danger in trying the process on infants, but as all children do not become affected with tuberculosis, it will be difficult to tell whether or not they owe their immunity to treatment.—*Medical Record.*

Society Reports.

THE NEW YORK ACADEMY OF MEDICINE.—SECTION ON PEDIATRICS.

Stated Meeting, March 10, 1904.

DAVID BOVAIRD, JR., M.D., CHAIRMAN.

A CASE OF RECTOVESTIBULAR FISTULA IN AN INFANT OF EIGHT MONTHS.

DR. SARA WELT KAKELS presented this patient. Both parents are healthy, and have been married six years. This is the third child, born normally at full term. On November 25, 1903, she was brought to the dispensary suffering from an enteritis, numerous undigested stools of bad odor being frequently passed.

The child was poorly nourished, was not bright, and could not hold up its head. There was also an umbilical hernia present and abundant adenoid vegetations. Physical examination of the abdomen and thorax showed nothing abnormal. The vulva was covered with a mucopurulent discharge. Inspection showed well formed, large and small labia as well as a normal anal orifice. A funicular depression was noted in the vestibule of the vagina directly below the hymen, and this led into a fistulous tract communicating with the rectum. The short fistula was easily permeable for a probe. It was lined with mucous membrane but presented on the margins a few granulating fissures; some fecal matter passed through the vagina. The perineum was short and low. No gonococci, diphtheria, or tubercle bacilli were found in the vulvar secretions. No traumatic history could be obtained. The defect appeared to be congenital.

To explain the development of this anamolous condition she said it was necessary to refer to the early embryological conditions. The common cloaca (the opening of the intestinal and urogenital passages at the caudal extremity of the embryo) persists until after the fifth week, while the separation of the cloaca into the genitourinary sinus and the anal orifice, as well as the formation of the perineum, takes place between the seventh and tenth week of embryonic life. According to the teaching of Perls, which was generally accepted up to a short time ago, this was effected by the downward advance of the rectovaginal septum. This theory was rejected in 1888 by Reichel; after observing this anamolous condition in an adult woman he made careful researches, verified by other observers, on human embryos. These led him to believe that the perineum was not formed by the advance of the septum rectovaginale, but was mainly effected by a median coalescence of two ridges situated on either side of the cloaca. These anal protuberances originating from the ectoderm advance and unite in the median line; they also grow upward and unite with the descending septum Douglasi. The raphe perinei remains as a remnant suggestive of this union. Accordingly it was supposed that this anamolous condition was caused by an incomplete union of the anal protuberances with the septum Douglasi and was thus to be considered as an arrest of development.

Regarding therapeutics the fistula should be split to the anal orifice and treated on surgical principles in the manner of a complete perineal laceration.

In literature only three analogous cases were to be found.

REPORT OF A CASE OF HYDROCEPHALUS TREATED BY DRAINAGE.

Dr. Alfred S. Taylor reported the case of an Italian child who was thirteen months old at the time of operation. The family history gave no idea as to the cause of the hydrocephalus. When born the breech presented and so much force was used in delivering the baby that a fracture of the leg occurred. The child had never had convulsions or serious illness during the early infancy. When five months old the parents noticed that the head was gradually becoming larger and from then on the head continued to grow. Just preceding the operation the physical examination showed a well-nourished child, with well-developed limbs and normal reflexes. The child was thirteen months old when operated upon. The patient had sufficient strength to roll the head about when on the bed or on the floor. The head was very large and the anterior fontanel widely open, tense and bulging. The eyes protruded and the sclera was visible all around the iris. For nine weeks prior to operation the child had been watched by a pediatrist and, during that time, the head had increased from 49 to 59 cm.

On March 13, 1903, the operation was performed under chloroform anesthesia. An osteoplastic flap about two inches in diameter was turned down with its hinge over the base of the mastoid bone. In the lower part of the dura thus exposed a semicircular flap, with base downward and about one inch in diameter, was made. The operation was so planned that the second tempero-sphenoidal convolution protruded through the opening and through this a slender needle was inserted, inward and slightly upward, until it entered the ventricle when clear fluid spurted out. Only a very small amount of fluid should be allowed to escape in this way. A drain was then made of half a dozen strands of No. 1 forty-day chromic catgut and arranged in a spiral, made half an inch longer than the thickness of the brain substance. Around the shaft of the drain was rolled Cargyle membrane. This drain was introduced with a narrow-bladed thumb-forceps into the ventricle along the tract made by the aspirating needle and the tip was permitted to project from one-quarter to one-half an inch into the ventricle. The free loops of gut were slipped under the dura between it and the brain surface in different directions, but chiefly downward toward the great lymph spaces at the base of the brain. A sheet of Cargyle membrane was slipped between the dura and the catgut loops to prevent adhesions. The dura was then sutured with catgut, the osteoplastic flap was replaced and held by chromic catgut and finally the skin was united with silk. Over the whole was placed a sterilized dressing applied with firm pressure. The wound healed by primary union. The reaction was moderate, the temperature on the second day rising to 103° F., but the child did not appear to be particularly sick.

Before operation the circumference of the head was 59 cm. and, ten days after the operation, when the dressings were first removed, it was the same. After the forty-fourth day two sets of measurements were taken but lost. About the sixty-eighth day there was noticed some asymmetry of the head, the right side being somewhat flattened. On the eighty-second day this was even more apparent and the circumference of the head was 55.5 cm., a lessening of 3.5 cm. since the operation. On the one hundred and fifth day the head had increased to 57 cm. On the two hundred and fifty-fourth day the head was 61 cm. and on the three hundred and twenty-sixth day it was 61.5 cm. During the seventy-two days preceding this last inspection the circumference had increased .5 cm. The fontanel was soft and retracted.

The eyes were intelligent, the exophthalmos had disappeared, and the child was playing in the crib.

Dr. Robert T. Morris said that the report of Dr. Taylor's case was certainly along the line of progress and pointed to a very interesting field for observation. In 1885 Kirke proposed draining the fluid into the connective tissue but obtained no good results and later, Senn did the same, separating the tissues of the scalp, all being done external to the skull; in both, failures followed. Dr. Morris experimented with spinal drainage. In 1821 Bernard reported fair results from compression. His report was followed by reports from various experimenters and then further work was abandoned for a time, all operations falling into disrepute. He said that about 1884-85 Morton suggested the use of a fluid consisting of iodin, iodid of potassium and glycerin. At this time Dr. Morris operated upon two Italians but lost track of them. In 1873 the *Irish Hospital Gazette* published a successful case, the cure being produced by the use of the seton. In 1890 there were 5 reported cures by this same method. In 1834 Conquest reported 9 cases that were drained, 1 was cured and 8 died from sepsis. Blackman, in 1854, reported 69 cases with fifty-three deaths and benefit or cure in the remaining 16. It was believed that if the fluid could be removed cure was possible.

As a bit of negative testimony Dr. Morris reported the following:—Recently he said Dr. Chapin sent him a case of hydrocephalus in which he planned to drain the ventricle into the temporal vein by means of a silver tube. Curiously enough he found a reason for his failure to get the desired result. The hydrostatic balance was so perfect that the fluid would not escape from the ventricle while the connection was intact with the silver tube. In further considering the mechanical features of the case he felt sure that if this mechanical obstacle of a collapsed vein could be overcome he would be able to drain the ventricle into venous channels.

Dr. Henry Dwight Chapin thought these experiments were very valuable and interesting as there was so much confusion regarding the causes for failure in the treatment of hydrocephalus. He had tried compression and found that it was not at all efficacious. He had tried it when a medical student, using adhesive plaster and rubber bandage; upon its application the child immediately went into convulsions. Again he tried another plan which was conceived and carried out when he was young and inexperienced. He opened the brain, introduced a tube into the ventricle, sewed up the parts, applied dressings and the child promptly died three or four days later.

Dr. Churchill Carmalt mentioned 5 cases treated with and without drainage. Case 1 was aspirated every other day for seventy days with apparently no effect upon the growth of the head. The aspirations were continued until the child became slightly pale. The head would diminish in size about ¼ cm. and, two days later, the loss would be regained. After being treated fifty days the head increased in size rapidly and the child later died of hydrocephalus without infection. Case 2 was aspirated four times four years ago; the child lived two years and then was lost sight of. Case 3 was opened and drained and died of infection. Case 4 was also opened and drained and did well for two weeks, when the drainage was removed and the child died some months later from hydrocephalus without infection. Case 5 was opened and drained; did well for ten days and then died from hydrocephalus.

Of the other cases he had seen one was in a child who had, at first only a spina bifida; one year later the child returned with a marked hydrocephalus, the head measuring 45 cm. Although there was no history of syphilis the child was given mercury and, at the end of one year, was quite well and today was in his office talking and walking. Two other cases died of hydrocephalus and one got well without any treatment. From time to time he said one would meet with cases of hydrocephalus which would get well without operation.

Dr. A. Ernest Gallant reported an experiment which he had recently made upon a seven months' child, born November 11, 1903. The mother had had two previous miscarriages, having been pregnant three times during the year. The child's head, when first seen, measured thirteen inches in circumference, and from ear to ear, nine and one-half inches. The most successful methods of treatment were those in which catgut drainage had been resorted to, passing the drain directly through into the ventricle; the complaint had been made that the catgut absorbed too soon, thus stopping the drainage; therefore, Dr. Gallant preferred silk-worm gut. A large hypodermic needle was introduced into the ventricle and strands of silk-worm gut were passed into the ventricle when drainage became fairly active. Drainage continued from January 31st to February 13th. Then to enlarge the drainage opening he took a fine silver wire and twisted four strands of it together and introduced this through a trocar into the ventricle, fastening it without by means of a split bullet. This was left in until March 2d when the child died. There was no sepsis. The child was receiving iodids, one grain, then two and finally three, given with each feeding, there being eight feedings a day.

The CHAIRMAN said that he had been much impressed with the remarkable changes in the brain tissues observed at autopsy in these cases of hydrocephalus, whether drained or not, and he asked Dr. Morris what he meant by a cure.

DR. MORRIS said that the report he referred to was not a tabulated one and, although it covered a number of years, it was not a comprehensive one. The socalled internal cases were not separated from others. Each case had been referred to as recovered, but the character of the recovery was not given. On careful analysis of the paper though he believed that cure meant, in the large proportion of the cases, that the secretion had ceased, that the hydrocephalus had not increased, that the mental faculties had developed and that the patient lived.

DR. GALLANT said that it was not necessary to have the head diminish in size to any extent so long as the tension could be relieved. The important point was that if there was no pressure exerted upon the brain it would develop, other things being equal.

DR. TAYLOR said he was very much interested in what Dr. Morris had said regarding draining the ventricle and wondered, if the ventricle were drained into the vein as proposed by him, what would happen when the child cried or strained; would the back-pressure within the venous system cause any difficulty with the cerebral pressure? He did not think that aspirating the fluid would accomplish much, because the fluid would reaccumulate as rapidly almost as it was removed. Again, while infection might not be carried in by the needle, certain elements might gain entrance which would lead to a hasty death. He referred to a series of 9 cases reported, in which there had occurred fracture of the skull with the escape of fluid from the ears or nose and with resulting recovery of the patients and a cure of the hydrocephalus. He did not believe any external drainage would permanently cure these patients because of the danger of infection. If one drained rapidly there would be a rise of temperature and convulsions and, to illustrate this, he spoke of the case of Dr. Keen a few years ago in which the ventricle was drained too rapidly by means of a rubber tube and a rise of temperature and convulsions occurred. Normal saline solution was then injected into the ventricle and, with the increased pressure, the temperature and convulsions disappeared almost at once. He emphasized the point that drainage should be just slow enough to keep down the pressure. One should remember that any damage to the brain could not be repaired and, therefore, one could only attempt to remove the excessive pressure. Treatment to be effective should be begun as soon as the diagnosis was made.

THE LIMITATIONS OF CHEMISTRY IN INFANT FEEDING.

Dr. Henry Dwight Chapin read this paper and said that the past few years had been characterized by an attempt to put artificial infant feeding on a scientific basis, a result greatly to be desired. The European method of determining the number of calories used by an animal, and then giving a quantity of food which, when burned, yielded the same number of calories, had been tried in infant feeding, leaving the baby to get what calories it could. This method of animal nutrition was not looked upon favorably for adult feeding by modern investigators of the problem of nutrition, who had found that much better results attended viewing an animal as an organism endowed with food preferences, than as viewing an animal as a mere machine in which any food was transformed into heat and energy. In America there had been a tendency, or rather an attempt, to place artificial feeding on a purely chemical basis.

The scheme of food preparation, based exclusively on percentage composition of milk, was now known to have been based on incorrect data. If one attempted to adjust the percentages of fat, proteids, carbohydrates, mineral matter and water to suit the infant, the question naturally would arise, what constituted suiting the infant? Was it to suit its digestion or its general nutrition and development? Modern investigators into the problem of nutrition had come to the conclusion that preferences for certain foods were a very important factor in feeding and could not be ignored, if the best results were to be obtained. It was a matter of common knowledge that there were different forms of fat and there were also different forms of proteid. The only feature that all proteids had in common was that they contained nitrogen in fairly uniform quantity, 15 per cent. to 18 per cent. He said that Van Slyke and his coworkers had their efforts crowned with the brilliant discovery of some of the chemical processes that took place in the formation and digestion of the curds formed from casein. In brief, these processes were that the rennet of the stomach converted the casein of milk into a curd or paracasein, which then formed a definite compound with hydrochloric acid as chlorid or bichlorid of paracasein, and then, but not till then, would pepsin attack the paracasein. He said that the most expert investigators into the problems of animal nutrition had found that the peculiarities of the species and individual must be carefully considered or good results in feeding could not be obtained.

After finding what kind of food was best suited to the animal's appetite and digestion, chemistry stepped in and aided in determining the quantities necessary to maintain the animal or enable proper growth to be made. Such investigations have shown that there were minimum quantities of different kinds of foods which were absolutely necessary for the well being of any particular animal or species of animal, and a chemical analysis would often be of great value in explaining lack of proper development or failure to do well. He said that in practice there was little call for frequent analysis of food; that after the minimum food quantities had been determined for a particular species of animal a general knowledge of the composition of foods, and a rough method of calculating the nutritive value of the food, was about all that was necessary. Each animal must be fed according to its peculiarities.

In infant feeding he said it had been found by experience that milk must be the basis of food, as milk developed the digestive tract. Milk diluted more than three times was not a safe food for continuous use for infants, for it did not contain enough proteid or tissue building material. Diluted condensed milk had the same defect. Experience had shown that infants required from 2 per cent. to 4 per cent. of fat and 4 per cent. to 6 per cent. of carbohydrates, along with tissue builders, to ensure proper growth. It should be borne in mind that some persons or animals appropriate their food to better advantage than others. There was no universally applicable food for man or beast and the successful feeder was the one who got the infant to take some suitable food and then adjusted the ingredients so that they were in sufficient quantity to carry on the normal chemical changes that took place in the body and allowed storage of tissue other than fat and, at the same time, produced proper functional development.

THE PHILADELPHIA PEDIATRIC SOCIETY.

Stated Meeting, Tuesday, March 8, 1904.

JOHN H. JOPSON, M.D., PRESIDENT.

A CASE OF CONGENITAL SYPHILIS.

DR. W. C. DREIN exhibited the patient, a boy fourteen and a half years of age, in whom there was marked enlargement of the liver and spleen. The child's father was syphilitic, the mother denying infection. Two of their children had died in infancy, of syphilis, before the birth of this boy. A child born later had always been healthy. This boy was normal at birth. He had eye-symptoms at the fifth week, and an eruption on the hands and feet at the sixth. General symptoms developed later, and lasted two years. These cleared up temporarily under treatment, which was renewed at intervals. The child had necrosis of the lower end of the left ulna five years ago. His first teeth were poorly developed; his second appeared one year ago, the upper left lateral incisor being notched.

The patient was seen by Dr. Drein in the Dispensary of the Episcopal Hospital in September, 1903. He was then pot-bellied; the liver and spleen extended below the umbilicus; there was fluid in the abdomen and a keratitis and iritis of the left eye were present. He was given potassium iodid, which he continued to take for one month. He did not return to the dispensary, but was looked up in February, 1904. At this time, the liver and spleen were somewhat smaller; but the liver seemed nodular. There was a distinct corneal ulcer with active iritis of the left eye. The conditions are now the same, except that the corneal inflammation has subsided.

DR. D. L. EDSALL said that the patient was interesting to him on account of a case that he exhibited to the Pediatric Society several years ago. The patient was a girl of the same age as the boy presented by Dr. Drein. The conditions in her case were similar, except that the liver showed at least two large gummata. These were so conspicuous, on account of their size, and the pain and tenderness they caused, that they led her physician to send the patient to the hospital with the diagnosis of sarcoma.

When exhibited, the girl showed almost normal conditions, so far as the liver and the spleen were concerned; but she still had a very high grade of albuminuria and a persistent tendency to general edema. It is of interest to note, said the speaker, that she afterwards entirely recovered from the latter conditions as well. She was seen by Dr. Edsall a year after this. At that time she had long been free from edema, and her urine was normal; she presented no evidence of disease except deafness and corneal scars. A fact recently emphasized by John Rose Bradford is that syphilitic patients presenting marked evidences of renal disease, often with decided albuminuria, not infrequently entirely recover; even though the albumin has lasted a long time, and though in the beginning the prognosis may have seemed very unfavorable. The girl mentioned is an example of this.

A CASE OF HYPERTROPHIC PULMONARY OSTEOARTHROPATHY.

Dr. D. J. M. Miller showed the patient, a child eight years old, who had had Pott's disease since her third year. She was in the Orthopedic Hospital for a long time, but for the last eight months had been an inmate of the surgical ward of the Episcopal Hospital. She was very much deformed, the angular projections in the upper dorsal region being of extreme degree. For a long time, she had had a cough—how long it was impossible to say, as she is the only one from whom her history can be obtained. There was, however, no sputum, and only a slight degree of fever (98°F. to 100.5°F.). While at the Orthopedic Hospital, and later in the Episcopal Hospital, the remarkable condition of her terminal phalanges was regarded as an extreme case of Hippocratic fingers. Dr. Miller's examination of the chest revealed, over the right supraspinous fossa and scapular region, dullness, bronchial breathing and pectoriloquy. The bronchial breathing was peculiar, in that it had a distinctly distant character and was free from râles; it gave one the impression of an old and inactive cavity. There were no heart murmurs. The distal phalanges of the fingers and toes were much hypertrophied and thickened, the great toes, especially, being twice the size and thickness of those of a normal child of this age. The finger-nails were shaped like a watch-glass, and curved over the finger-tips like a parrot's beak. There was absolutely no cyanosis. The x-rays showed thickening and enlargement of the entire distal phalanges. The picture differed from a radiograph of clubbed fingers in a case of congenital heart-disease, which showed no enlargement of the terminal bones.

Dr. Miller referred to the fact that hypertrophic pulmonary arthropathy is a disease of adults. In it, not only the terminal phalanges, but also the remainder of the bones of the hands and feet, as well as the long bones of the forearms and legs, are enlarged—particularly the articular ends of the latter, which are so altered that movement is impeded. In this patient the long bones and the joints are not affected, the hypertrophy being strictly confined to the terminal phalanges. Dr. Miller knew of no true cases of osteoarthropathy in children, except Whitman's (*Pediatrics,* Vol. II., pp. 154-162). Gillet, Mozard, Marfan, Moussous, and others have described, under this title, cases of hypertrophy of the terminal phalanges in children, with pulmonary tuberculosis and emphysema, particularly the latter (in a word, a condition similar to this child's); and Rotch reported last year to the American Pediatric Society a case of like character. If these cases are genuine instances of the affection in question, it is evident that in children the disease is practically limited to the terminal phalanges; unless, as Whitman's case appears to show, hypertrophy of the distal phalanges is an early stage of the affection, the enlargement of the long bones occurring later. His patient was under observation for a long time, and the case was at first considered to be an instance of Hippocratic fingers.

Dr. Jopson asked for information as to the degree of Pott's disease present in the case, and inquired whether the pulmonary compression and distortion consequent upon that disease could have been the cause of the changes in the extremities.

Dr. Edsall asked Dr. Miller whether there was any evidence of peripheral neuritis, and referred to the fact that a number of foreign observers have, within the last few years, leaned toward the view that the condition is due to neuritis—a view that seemed to the speaker extremely unsatisfactory, both because the vast majority of cases of peripheral neuritis are unassociated with such changes; and because somewhat analogous conditions of the extremities are so frequently associated with no definite changes in the nerves. Among analogous conditions in which there is no evidence that such disease of the nerves has given rise to the condition, but in which there is evidence of a general toxic state, Dr. Edsall mentioned the clubbing of the fingers that occurs in the advanced stages of socalled splenic anemia, and the peculiar changes in the fingers first described by Bouchard as occurring in gastrectasia. He believed that the changes in the nerves described in cases of hypertrophy of the long bones and of the soft tissues over them are probably due to the same cause as are the other lesions, but are not themselves the cause of these lesions.

TWO CASES OF COMPLICATED CONGENITAL HERNIA.

Dr. L. J. **Hammond** exhibited two patients whose condition bore directly upon the treatment of inguinal hernia complicated by undescended testicle. The first patient was a boy two years of age, with a left inguinal hernia (oblique), the testicle being adherent in the canal, one inch external to the ring, and firmly fixed. The speaker believed that fetal peritonitis, rather than any defective conformation of the parts, was the cause of this condition. He thought that in treating hernia of this type the undescended testicle should be transplanted into its proper position in the scrotum, after which mechanical appliances might be put on and worn up to the sixth year. After this, if necessary, operation should be performed.

The second case was one of hypospadias with right inguinal and umbilical hernia. The hypospadias was of the balanic form, the mildest of all its grades. In this case, also, the testicle was seriously in the way of mechanical treatment of the hernia—in this instance, on account of adhesions to the hernial mass. Consequently, it was carried into the abdominal cavity when the hernia was reduced. This form of hypospadias could, in Dr. Hammond's opinion, be safely left alone for a while. The hernia should be treated with pressure produced by a padded cork, held in position with straps. The treatment was first directed toward freeing the testicle and transplanting it into the scrotum. After this, a hard-rubber truss could be used. If this course were not successful, the patient should be operated upon.

A CASE OF PYOPERICARDIUM.

Dr. D. J. **Milton Miller** and Dr. J. C. **Gittings** reported a case of pyopericardium complicating ileocolitis in an infant of four and a half months. The secondary nature of purulent pericarditis in children was pointed out, and its comparative frequency emphasized—especially the tendency of pericardial effusions to be of the purulent variety in infants and in very young children. After the fifth or the sixth year, the etiological influence of rheumatism comes into play, and the effusion is usually serous. Batten's and Still's statistics were quoted; these showed that pus is found in about 3 per cent. of the autopsies upon children. In the Children's Hospital, Philadelphia, however, the proportion was much lower, not more than 1 per cent. having shown pus in the pericardium. The most common cause was empyema, especially left-sided, either alone or accompanying pneumonia, and a variety of other affections, particularly pyemia-producing processes. Gastroenteritis and ileocolitis are occasionally the cause, as in the case reported. The bacteria usually present in suppurative pericarditis are those of the primary infection, although the pneumococcus is by far the most frequent. The infection of the pericardium may occur at any stage of the primary disease; in the case reported, it was probably a terminal infection.

The authors spoke of the infrequency with which the affection is recognized during life, because of the indefinite symptoms: the absence of friction, cardiac enlargement, and other signs by which the disease is diagnosed in adults. The reasons for failure in diagnosis are chiefly the small amount of pus usually present, the absence of dilatation, and failure to keep in mind the possibility of its occurrence. As the issue is generally fatal, and as the only hope lies in prompt drainage, the necessity of making frequent examinations of the heart in all affections in which pericarditis may supervene, in order that operative measures may be instituted at the earliest possible period, was insisted upon.

The case reported was that of a baby, four and a half months old, who after three months' illness, characterized by bloody and mucous stools, with moderate elevation of temperature and slight cough, succumbed at last through exhaustion. The disease of the pericardium was not suspected during life. The heart had been listened to several times, but nothing was noted except gradually increasing feebleness of the sounds, a condition attributed to the marked asthenia. Neither was the interesting condition of the lung recognized or thought of, the only pulmonary symptoms being cough and bronchitic râles.

The pathological diagnosis, made from the autopsy-findings and from the examination of microscopic specimens, was as follows:—Fatty and congested liver; moderate parenchymatous change in the kidneys; subacute interstitial colitis, without ulceration; pleurogenic interstitial pneumonia, with small scattered areas of pneumonic consolidation; serofibrinous pericarditis. Cultures from the pericardium and the spleen showed a mixed growth, which failed to grow on reinoculation and could not be isolated.

The postmortem records of the Children's Hospital since 1896 show 6 cases of serofibrinous pericarditis, and only one of purulent pericarditis, among three hundred and one autopsies. Among this number there were also 6 cases of adhesive pericarditis. Twelve cases showed an excess of pericardial fluid (over 30 cc., estimated).

Dr. T. S. Westcott said that he thought neither Dr. Miller nor Dr. Gittings had included traumatism among the causes of suppurative pericarditis. Such a case had come under his own observation about nine years before. It was reported to the Pathological Society on October 25, 1894. The patient was an infant six months old. The cause of the extensive pyopericardium was a wandering needle. This needle had accidentally, and without the parents' knowledge, entered the chest in the second intercostal space, about the costochondral junction on the left side. The child was first seen in the Dispensary of the Methodist Hospital, where it was brought for a small inflamed swelling in the epigastrium. At a subsequent visit, a point of suppuration in this swelling became evident; and projecting from it was found the eye of a sewing-needle, one and three-quarter inches long. On removing this, a sinus was found, into which a probe could be passed about three inches backward and slightly upward—apparently close beneath the under surface of the diaphragm. Within about ten days after the first visit, the patient was referred to the Medical Dispensary, where a large area of dullness, occupying the position of the pericardium, was readily detected. Death occurred thirteen days later.

At the autopsy, the pericardium was found to contain 60 cc. of thick, yellow pus, in which were large curds of lymph; and similar masses were found covering the whole surface of the heart. It was quite evident from scars near the roots of the great vessels, and from a perforation of the diaphragm, communicating with the end of the sinus in the epigastrium, that the needle had perforated the chest wall near the base of the heart; traversed the pericardium; pierced the diaphragm; and finally presented itself in the epigastrium, having infected the pericardium in its course. The pus contained the staphylococcus pyogenes aureus. The large curd-like masses of lymph would have effectually prevented successful aspiration of the pericardial sac—an operation that in 11 cases collected by Février, in 1889, was attended with a mortality of 100 per cent. Of four other patients treated with incision and drainage, two (both adults) recovered. In this case, nothing but prolonged scraping could have relieved the heart of its coating of shaggy lymph; and nothing but prolonged irrigation —a proceeding that in at least 1 case (Parker's) caused a fatal termination—could have cleansed the cavity. The tender age of the patient offered a decisive contraindication to radical operation.

Dr. Jopson said that he had understood Dr. Miller to state that friction-sounds are rarely present in these cases of pyopericardium. He referred to a case under Dr. Wharton's care recently seen by him. A small abscess had appeared on the foot; and, although this abscess was opened, the child thereafter exhibited dyspnea and fever, and appeared to be gravely ill. A decided friction-sound was frequently heard toward the base of the heart. Puncture revealed nothing; but the case came to autopsy, and a pyopericardium with malignant valvulitis of the aortic cusps was found.

Dr. Miller said that he had not previously seen Dr. Gittings's portion of the paper, and that he had been interested by the conditions described as present in the lung. He referred to the views expressed by Dr. Jacobi before the Philadelphia Pediatric Society in regard to primary interstitial pneumonia, and said he considered Dr. Gittings's observations interesting in this relation. He wished to be clearly understood that the figures read by him related to purulent pericarditis, and not to pericarditis in general. He had been somewhat struck with the fact that Dr. Gittings had found but 1 case of purulent pericarditis among the large number of postmortem examinations at the Children's Hospital he had gone over. This result is in striking contrast with the fact that the English report about 3 per cent. of cases of purulent pericarditis in their hospital-autopsies, mostly occurring after empyema. The number of cases seen in this country is much smaller. As to the friction-sound, Dr. Miller said that he had not himself had any experience with these cases in young children. His belief, however, was that while friction-sounds are said to be often absent in these cases, the more frequently and the more carefully they are listened for, the more commonly will they probably be heard. One point worthy of note in this connection was that many of these cases occur in circumstances that do not lead one to make an examination of the heart; therefore, friction sounds may often be present, although undiscovered.

Dr. Jopson, in relation to the difficulty of making a diagnosis in cases of this sort, referred to a case of Dr. F. A. Packard's. Dr. Packard thought it probable that the infant had abscess of the liver. At his request, Dr. Jopson made a puncture at the point designated by Dr. Packard, and found that there was no abscess of the liver; but autopsy showed that there was a large pyopericardium.

Dr. Gittings, in closing the discussion, said that it must be remembered that the serofibrinous exudate could easily become purulent, even if not already so considered; but that, even with this addition, the figures for purulent pericarditis, as Dr. Miller had remarked, are extremely low as compared with those published by Englishmen. Dr. Gittings had himself been much interested in the condition of the lung on account of Dr. Jacobi's views, and thought that the specimen that he had exhibited under the microscope offered some confirmation of these opinions.

A CASE OF INTUSSUSCEPTION CURED BY OPERATION.

Dr. H. K. Hill read the report of a case of intussusception, with operation and recovery, the patient having been in the service of Dr. Le Conte at the Children's Hospital.

The full report of the case will be found on page 350 of this number of Archives of Pediatrics.

Dr. Jopson said that he had seen the patient at operation, and that the case illustrated the value of early operation. Injections are said to be useless when the bowel has prolapsed, and prolapse had occurred in this case.

Acardiacus Amorphus.—Dienst (*Monats. f. Geb. u. Gyn.*, March, 1903) describes an authentic case of this sub-variety of acardiac twin, extremely rare in the human species. The monster was as big as a fist, three-lobed, and invested with skin bearing lanugo. Its cord was very short, and ran into that of the normal twin, the placenta being, of course, common to the two; it had been twisted off, and was dilated and blunt at its termination. Dienst had the parts and the monster carefully dissected, and could plainly detect the inversion of circulation, the admitted cause of the extreme arrest of development in an acardiac twin. The umbilical arteries brought used-up blood through the same arteries in the brother.—*British Medical Journal.*

Current Literature.

PATHOLOGY.

Ballin, L.: The Presence of Diphtheria Bacilli in the Ordinary Coryzas of Infants. (*Jahrb. für Kinderhk.*, August, 1903, p. 412.)

The author reviews the work of Stoos and Neuman on this subject. Stoos found diphtheria or pseudodiphtheria bacilli in the nasal secretion in 72 out of 75 infants suffering from coryza. In only 4 of these cases were the bacilli virulent in injected guinea-pigs. Neuman made a bacteriological examination from the nasal secretion of 206 infants—both healthy and sick—and found pseudodiphtheria bacilli in every case and Klebs-Löffler bacilli in 8 per cent. of the sick cases.

Last December a number of cases of coryza developed in the Kinder-Asyl at Berlin and the author gives the results of a careful bacteriological examination of these cases. Sixty-four cases were examined and only in 12 were diphtheria or pseudodiphtheria bacilli detected. Cover glass smears did not show diphtheria-like bacilli in any of the 12 cases. The diphtheria-like bacilli were obtained after growth on blood serum. Animals were inoculated from 11 of these cases with the following results.

Four times the animal died, five times there was a marked infiltration about the point of injection and in two instances there was no reaction. Only two of the infants showed anatomical or clinical evidences of diphtheria. Both these infants died of laryngeal croup and membrane was found in the larynx at the autopsy.

The author differs from the conclusions reached by Stoos and Neuman and believes that the presence of diphtheria bacilli and pseudodiphtheria bacilli in the nasal secretions in cases of coryza is a rare occurrence. In his own cases he believes the source of the bacilli in 10 cases were from the 2 cases with clinical diphtheria.

The author believes that cases with bloody, purulent discharge, fever and a general appearance of sickness should be isolated and given an injection of serum. A bacteriological examination should be made as a control on the clinical diagnosis. These cases should be kept isolated until the diphtheria bacilli have disappeared.

Rasumoffsky, A. A.: The Origin of Craniotabes. (*Russki Vratch*, Vol. iii., No. 5, p. 188.)

The author's work is based on the microscopical study of twenty-one infantile bodies. He arrives at the following conclusions:—

There are two kinds of cranial softening in children, the rachitic and the non-rachitic, the latter being due to atrophy or undeveloped structure of the bones, while the former is produced by lack of lime-salts in conjunction with the pressure of the brain on the tender bone. The rachitic changes are seen most frequently after three months, while the atrophic changes may begin even during intrauterine life. Rachitic softening of the skull can be recognized on the living child only in the presence of the characteristic rosary on the thorax.

Atrophic craniotabes may be due to syphilis, and in such cases must be looked upon as congenital.

The microscopical pictures of the rachitic and the nonrachitic craniotabes are widely different.

MEDICINE.

Stewart, John: Evidences of Rheumatism in Childhood. (*Glasgow Medical Journal*, October, 1903, p. 255.)

As an introduction to a discussion of this subject at the Glasgow Southern Medical Society, Dr. Stewart spoke of the early clinical signs. Besides arthritis, cardiac affections, and chorea, other disorders are frequently manifestations of rheumatism, such as tonsillitis, bronchial and gastric catarrhs, pleurisy, pneumonia and some erythemas. The states of health in which rheumatic manifestations may show themselves can be set down as (1) malaise, (2) slightly febrile and (3) highly febrile. The child that is brought to the physician's attention because of malaise, if rheumatic, will usually be pale, thin, very active, and recognized by the mother as a nervous child who plays very hard and becomes thoroughly exhausted. The single actual complaint may be want of appetite. The history of gastric dyspepsia, along with frequent tired feeling, growing pains, slight colds and erythematous eruptions, would make rheumatism all the more probable. Purpuric spots or the presence of a cardiac murmur without previous scarlatina would confirm the diagnosis. The chief morbid conditions associated with rheumatism in the slightly febrile state are tonsillitis, and bronchial and gastric catarrhs. With such catarrhs the anemia is out of all proportion to the severity of the catarrh, and a cardiac murmur is very apt to develop. Subcutaneous fibrous nodules are diagnostic.

While carditis frequently occurs in the slightly febrile condition, it plays its most important part where the fever is above 102.6°F. In such cases there is usually a combination of several phases of rheumatism; arthritis and pneumonia in particular are much more distressing, as well as more dangerous, when associated with cardiac rheumatism.

Clemens, J. R.: Enlarged Bronchial Glands. (*Medical News*, December 12, 1903, p. 1,121.)

The writer is impressed with the importance of making the diagnosis, and in examining seventy children brought to a clinic for various ailments, found evidences of enlarged bronchial glands in twenty. The cough usually present in such cases is apt to be set down as due to asthma, chronic whooping-cough and laryngismus stridulus.

Signs of the condition are unwonted prominence of a network of veins over the upper part of the sternum and thorax; dullness for a variable distance to the right or left of the manubrium sterni, and dullness in the interscapular region at the level of the fourth or fifth dorsal vertebra. On hyperextension of the neck there is a bruit similar to that heard in the great vessels in high grades of anemia.

Barnes, E.: Hyperpyrexia in Measles. (*British Medical Journal*, December 5, 1903, p. 1,462.)

Four cases are reported, in all of which there was either bronchitis or bronchopneumonia. The patients were from ten months to three and one-half years old and were seen during an epidemic of 50 cases. These four patients were the only ones that died, and all had hyperpyrexia—three having a temperature of about 106°F., while the fourth had a terminal fever of 111°F. This last patient, three and one-half years old, had been previously treated for bronchitis, and as the measles eruption appeared, diarrhea and bronchopneumonia developed. When first seen the evening temperature was 104°F., the rash was fading, and the child was delirious. After a bath there was quiet sleep until 4 o'clock the following morning, when the child awakened talkative and apparently improved, the temperature being 101°F. At 7:30 A.M. the physician was sent for, as the child had "fainted." The temperature was 106°F., there was stertorous breathing, complete insensibility and a pale, though moist, skin. Despite a bath, the temperature at 9:30 o'clock was 110°F. and when death occurred at 10 o'clock had risen to 111°F.

The writer says that he has since heard of three other cases of measles that died suddenly with hyperpyrexia.

Judson, Joseph Edward: Purpura (Peliosis) Rheumatica with Stercoraceous Vomiting. (*The Lancet,* September 19, 1903, p. 824.)

The patient, a male aged seventeen years, was admitted to the hospital as a supposed case of intestinal obstruction on May 3, 1903. He had been under medical treatment for ten days for rheumatism and had been having only a milk diet. On the evening of May 1st he began to vomit and on the next night the vomited matter, which had been bilious, was fecal. On admission he was found to be in collapse with a quick, thready pulse. There was no distention of the abdomen, neither was there any hernia nor any tenderness over the appendicular region; the liver dullness was present and there was no accumulation of feces in the rectum. He complained of pain over the epigastric and umbilical regions. There was a marked purpuric rash over both ankles and the outer sides of the legs and also on the forearms. Hypodermic injections of strychnin and digitalis, given for the collapse, were followed by marked subcutaneous extravasation of blood. He was given sips of hot water and small quantities of milk, but vomited immediately afterwards. On the 4th, at 12:45 A.M., the vomit was large and distinctly fecal. A glycerin enema was given at 2:30 P.M. with a slight result. At 4:30 P.M. he again vomited, but this time it was of a bilious character. Feeding by the mouth was stopped and no more vomiting occurred; rectal feeding, however, was continued for forty-eight hours. Laparotomy was discussed but the operation was not considered justifiable. The symptoms subsided, the purpura disappeared, and the patient made a good recovery, leaving the hospital on June 23rd. The writer had seen the patient several times afterward, and he appeared to be perfectly well. There was no evidence of hysteria.

Koplik, Henry: Tuberculosis of the Tonsils. (*American Journal of the Medical Sciences*, November, 1903, p. 816.)

According to the author primary and isolated tuberculosis of the tonsil is very rare, there being only 1 recorded case in recent literature. Primary tuberculosis of the tonsil, with accompanying tuberculosis of the cervical lymph nodes, and the same conditions along with secondary foci in the lungs or generalized, are less uncommon. Children furnish by far the greatest number of cases of the different varieties of infection.

Enlarged tonsils and adenoids are infected with the tubercle bacillus in about 10 per cent. of the cases, but may not be the primary focus of the disease.

The author reports a case of primary tuberculosis of the tonsil and lymph nodes which was dated to a definite exposure of the child to infection by his consumptive grandfather.

Kober, George M.: The Transmission of Bovine Tuberculosis by Milk, with a Tabulation of Eighty-six Cases. (*American Journal of the Medical Sciences*, October, 1903, p. 684.)

After reviewing the literature of the subject, Kober tabulates 86 cases of milk bovine tuberculosis, as well as additional cases showing transmission of bovine tuberculosis to man as the result of topical application of milk or of wound infection. His conclusions are as follows:

(1) Tuberculosis may be transmitted to man in milk from tuberculous cows. The danger from this source is real and cannot be measured by the actual number of recorded cases, but should be judged in part, at least, by the inoculation and feeding experiments and the accidental wound infections which have established the intercommunicability of bovine and human tuberculosis.

(2) The degree of danger may also be estimated by the prevalence of bovine tuberculosis and of the forms other than phthisis pulmonalis in man, remembering that the infectious qualities of milk are greatest when the udder is the seat of lesions, and that Gebhardt's experiments have shown that tuberculous milk when diluted with the milk of sound animals in the proportion of 1:40 lost its infective power.

(3) The experimental studies also indicate that while the bacilli of human tuberculosis possess different degrees of pathogenic power and are often feeble virulence for cattle, Koch's as-

sumption that human and bovine tuberculosis are distinct and that human tuberculosis cannot be conveyed to cattle appears to be disproved, and his failure to secure similar results may be attributed to the use of human bacilli of diminished virulence.

(4) Recent investigations have strengthened Smith's claim that there are two types of tubercle bacilli—the socalled bovine and human types, possessing certain morphological and biological differences; but it has also been shown that virulent cultures may be obtained from both of these types, which when inoculated into animals produce the disease in question.

(5) Further research seems desirable with a view of determining the frequency of primary intestinal and abdominal tuberculosis in all cases which come to autopsy, whether the child perished from tuberculosis or not; and in these autopsies the bacteriological examination should be directed to the existence of the two types of tubercle bacilli originally referred to by Smith, and whether the bovine type predominates in the socalled scrofulous lesions.

(6) Careful chemical analyses of the milk of tuberculous animals should be made with a view of determining the amount of phosphoric acid as compared with the quantity in normal milk, since it appears probable from Dr. de Schweinitz's biochemical researches that the excess noted by the older chemists is really the result of bacterial activity in the udder of the cow.

(7) In the meantime the pathologist has no occasion to reverse his opinion as to the identity of human and bovine tuberculosis, and the sanitarian has no reason to assume that the human subject is immune against infection with the bovine bacilli or is so slightly susceptible as to cause him to relax his efforts in preventive measures.

Riviere, Clive: The Anemias of Infancy. (*The Lancet,* November 21, 1903, p. 1,419.)

The author tabulates his results of the study of 13 cases of anemia in infants under two years of age, and considers the various factors in their causation. He sums up his conclusions as follows:—

(1) That anemia from any cause in infancy if severe enough gives rise to the peculiar symptoms grouped under the headings "anemia splenica infantum" and "anemia splenica pseudo-leukemica" of von Jaksch.

(2) That, consequently, these are not specific blood diseases but owe their peculiarities merely to the "infancy factor," and that they represent merely different stages of the same condition.

(3) That the common cause of severe anemia in infants is gastro-intestinal catarrh, leading to the absorption of toxins either from the growth of micro-organisms or possibly from the formation of poisonous by-products of digestion.

(4) That leukemia of infants is not a separate disease, but merely a still more advanced stage of this anemia—that is, that the difference between them is one of degree and not of kind.

(5) That leukemia of adults is a return to the condition of an infantile anemia and that, being rare, its causation is probably so narrowed down as to be practically specific.

Catelin and Barthélemy: A Rare and Singular Variety of Incontinence of Urine. (*L'Union Méd. du Can.*, December, 1903, p. 726.)

A child three years old had suffered the above complaint from birth. The urine oozed continually from the meatus beside the normal micturition of 150-200 grams which occurred every three hours. All treatment failed to relieve the condition. The bladder was of normal capacity, the organs of the body and the nervous system were found to be in excellent condition. In view of these facts, the examiners suggested the following hypothesis:—that one ureter opened normally into the bladder above the sphincter, giving the normal micturition; and that the other opened into the urethra below the sphincter causing a permanent oozing. This hypothesis was based entirely on the embryology of the uro-genital canal. As a proof an injection of methylene blue was made directly into the bladder with the result that the oozing of clear urine continued below the point of injection, while the urine coming from the bladder was colored a deep blue. The method was repeated as a matter of confirmation. It is impossible to state exactly where the malformation existed. Cystoscopy might be tried when the organs develop, and possibly the malformed ureter might be grafted to the bladder.

Potapoff, I. П.: The Third Tonsil in Infancy. (*Russki Vratch*, Vol. ii., No. 49, p. 1,747.)

The frequency of adenoid vegetations has been estimated by Potapoff at about 72 per cent. of all children treated at his policlinic for diseases of the nose and throat. He thinks it highly probable that adenoids often date back to very early infancy, some time elapsing before they begin to cause appreciable disturbances.

Early diagnosis of adenoids is essential, as this seemingly trifling affection may lead up to a host of other ills, such as otitis, rhinitis, dyspepsia, anemia, etc., etc. Unfortunately, most of our standard text-books ignore adenoids in early infancy.

Sucklings suffering from adenoids take the breast with difficulty, do not breathe freely, vomit while feeding, owing to the milk going the wrong way, and often end in dyspepsia. By means of anterior rhinoscopy and by direct palpation, the diagnosis may be confirmed.

Operative removal is indicated in every infant above four months of age. Before this time cleanliness of the rhinopharynx must be maintained with weak saline or alkalin solutions.

Blumenthal, M.: *Serous Meningitis and Lumbar Puncture.* (*Archiv. f. Kinderhk,* Vol. xxxviii., p. 18.)

A rachitic boy of eight years suffered from intense headache, which came on about three weeks after a fall. There was vomiting, and though the head was held stiffly, opisthotonos was not present. Neither were there any spasms. Lumbar puncture, withdrawing 40 cc. of clear, serous fluid, gave marked relief. At a second puncture 100 cc. of fluid were withdrawn and the boy was cured. He afterward underwent an operation for the straightening of his rachitic tibiæ.

Three explanations of the condition are possible:—first, a simple serous meningitis; second, an acute serous meningitis of traumatic origin, due to the fall on the head three weeks before; third the presence of a chronic hydrocephalus (often found in rachitis), which was stimulated to an acute exacerbation by the fall. The author finds it impossible to definitely determine which was the true explanation.

Philippow, A.: On Atonic Dilatation of the Stomach in Children. (*Archiv. f. Kinderhk.,* Vol. xxxvii., p. 428.)

Atonic dilatation of the stomach is not rare in infancy. It may appear at the end of the first year, especially in artificially-fed babies, and is then usually mild in type. The severest form is found in children from six to eight years old. Any lowering of tone is a predisposing factor, even without the abuse of food. The symptoms are those of anemia with bad breath and distended abdomen. A succussion sound may be elicited five or six hours after feeding. Constipation with foul stools is apt to alternate with diarrhea. Pain in the epigastrium, migraine, vertigo, insomnia, restless sleep, or night terrors, are due to intestinal toxemia. Treatment must be directed toward three points:—The regulation of the child's diet; the cure of the dyspeptic and catarrhal symptoms, and the restoration of tone to the weakened muscle of the stomach and intestine. Permanent improvement can only be looked for after continued treatment lasting one or two years.

Vincent, H.: A Case of Amebic Dysentery. (*La Presse Méd.*, December 23, 1903, p. 879.)

In reporting the above case, the author makes the following distinctions between the principal varieties of dysentery:—

There is the dysentery common in the temperate zone, caused by the bacillus of dysentery; and there is the dysentery peculiar to warm climates, due to the ameba of dysentery. Finally, a few cases have been recorded of amebobacillary origin.

The symptomatology is identical. The differential diagnosis is made by microscopic examination, cultures of the stools and the sero-reaction. In the amebic form, however, there is a tendency to chronicity from the outset; it has an irregular course with frequent remissions and exacerbations; the stools are alkalin, and the disease is sometimes complicated by hepatic abscess. The bacillary variety, on the contrary, has an abrupt onset, an acute course, cure or death resulting within fifteen or twenty days. The stools are neutral or acid and there is no abscess of the liver. In the tropical dysentery, the lesions are confined to the large bowel, which shows deep ulceration and death of tissue. The ulcerations in the bacillary variety cover the entire large intestine, very often extending to the lower portion of the ileum, are always superficial, and never reach the muscular coat.

Aviragnet, E. C.: Infantile Scorbutus; Suppurative Hematomata, Followed by Osteomyelitis of the Femur and Ribs. (*La Presse Méd.*, December 16, 1903, p. 865.)

The first case refers to a baby fourteen months old, who, until a month before, had been in excellent health. He suddenly began to lose weight, and cried on the least movement, which seemed to cause him intense pain. A swelling was noted over the femur above the right knee. There was gingivitis and a hemorrhagic line above the teeth characteristic of scurvy. The child's diet had been commercial sterilized milk; ass's milk was immediately given in its stead with 2-4 teaspoonfuls of lemon and orange juice, with the result that in eighteen hours improvement was noted; in forty-eight hours the baby no longer suffered and in one month there was complete cure.

The second case occurred in a six months baby, fed on the same milk, and who in the course of a grippal bronchopneumonia developed typical symptoms of scurvy, with hematuria and subperiosteal hematomata. In the course of the pneumonia, the hematomata suppurated and osteomyelitis followed in the femur and ribs. The typical symptoms of the scurvy disappeared, under the above treatment, but the bone lesions persisted for a long time and were finally cured after removal of the dead bone.

Gil y Casares, M.: Typhoid Form of Pneumonia in an Infant. (*Archiv. de Gin. Obstetr. v Pediatr.*, Vol. xvi., No. 17, p. 395.)

The author thinks that lobar pneumonia is much more frequent in children than is usually believed, and that only carelessness on the part of physicians is the reason why the diagnosis of lobar pneumonia is not more frequently made in children instead of that of bronchopneumonia. He reports a case of lobar pneumonia in a child aged five years, in which the symptoms were those of the typhoid state. There were, in addition, complete anorexia, meteorism and pain over the abdomen, especially in the right hypogastrium. These abdominal symptoms made one think of a possible combination of typhoid fever and pneumonia, but it is probable that the abdominal pain was referred there by the patient, and had its actual seat in the lungs.

Resimelli: A Contribution to the Study of the Renal Function in Intrauterine Life. (*Il Policlinico*, No. 49, 1902, quoted in *Riv. di Clin. Pediatr.*, 1903, Vol. i., No. 9, p. 612.)

The author studies the urine passed by infants immediately after birth, and concludes as follows: The urine of the newly-born, voided immediately after birth, has a high hemolytic power which is inversely proportional to the concentration of this urine as determined by the freezing-point thereof. The latter is considerably higher than that of the urine of children in extrauterine life, and is on the average 0.207°C., while the amount of sodium chlorid excreted by the fetal kidney is proportionately larger than that found in the urine of older children. The urine in intrauterine life is not constant in composition, but undergoes changes according to certain circulatory conditions of the fetus. The elimination of urine in the fetus has an effect opposite to that of the act of swallowing liquor amnii; in other words, it diminishes the osmotic tension of the blood, the lymph, and the tissue fluids. The fetal urine should not be regarded as the principal source of the amniotic fluid, as the amount of it secreted into the amnion is very limited. At times, there may be no secretion of urine into the amniotic sac before the moment of birth.

Barbier, H: Results Obtained in the Different Varieties of Infantile Tuberculosis at the Hérold Hospital. (*La Tuberculose Infantile,* February 15, 1904, p. *3*.)

The writer makes a very careful study of the disease and divides it as follows:—

(1) That variety with little or no fever, localized in the glands at the hilum, or in the lungs, without marked intoxication symptoms and without diarrhea. This form has the best prognosis and responds very favorably to treatment.

(2) The febrile form, sometimes prolonged, but circumscribed and without intoxication phenomena, precocious cachexia or diarrhea. Very satisfactory results are sometimes obtained.

(3) The variety with or without fever where cachexia appears early accompanied by intense anemia, general intoxication, diarrhea and bacilli in the sputum. Prognosis is absolutely bad, death following sooner or later.

(4) Extrapulmonary variety, such as the pleuritic, peritoneal, etc., where the prognosis is favorable or non-favorable, according to the accompanying conditions stated in the above three paragraphs.

Schwab and Levy-Bing: Treatment of Syphilis in the New-born by Injections of Soluble Mercury. (*Annales de Méd. et Chir. Infant.*, March, 1904, p. 161.)

Five further cases are added to those already cited in the fall of 1903, in which the injections have proven remarkably efficient and without untoward symptoms. The hypodermic method of treatment should be used without hesitation in the newly-born, even at birth. It is rapid, sure, without danger, and produces an intense mercurialization which is of benefit in grave cases, such as visceral syphilis. It does not disturb the digestive tract, the integrity of which is indispensable in nurslings, and it replaces most advantageously the mercurial inunctions. An aqueous solution of the biniodid is used in doses of 1-2 milligrams for infants weighing 2,200-3,500 grams. They are given in series of 10-15 injections, followed by a rest of fifteen days, and then a series of ten more injections. The injections are made, ordinarily, in the buttocks or flanks, with a Pravaz syringe.

SURGERY.

Luke, Thomas D.: The Present Position of Ethyl Chlorid. (*The Lancet*, November 28, 1903, p. 1,531.)

In a letter to the editors Dr. Luke gives his views of the value of ethyl chlorid based upon an experience of over 400 cases:—(1) It is a pleasant anesthetic to inhale, extremely rapid in action, portable, and inexpensive. (2) It compares favorably with nitrous oxid as regards induction of anesthesia and available period; it produces no cyanosis when used in suitable doses and necessitates the carrying of no heavy and cumbersome impedimenta. (3) The technique of the administration is very simple. (4) While not as safe as nitrous oxid in the hands of the unskilled we are justified in concluding from the material available that it is safer than ether, all things considered, and much safer than chloroform or bromid of ethyl. (5) It can be safely readministered at one sitting, this being a further point in its favor over bromethyl. (6) It is not usually followed by marked after-effects. (7) It is preferable to nitrous oxid when the patient is very young, very old, or anemic; while those who are suffering from cardiac, renal, or lung affections take it quite well. (8) It is in no way to be preferred to chloroform or ether for *prolonged* anesthesia, but may be used with advantage merely to induce anesthesia which is maintained either with chloroform or ether. (9) For minor surgery, throat operations, and the extraction of teeth it is the best anesthetic available at the present time. (10) Pure ethyl chlorid, sold as such, is always preferable to proprietary preparations and to mixtures such as somnoform. (11) In conclusion, I think one of the strongest claims of ethyl chlorid to being considered a fairly safe anesthetic lies in the fact that during the past twelve months it has been experimented with wholesale throughout the country and yet no death has been recorded. It is quite possible that we may hear of deaths from time to time as the anesthetic becomes more widely used, often by quite unskilled and inexperienced persons; but that should not blind us to the real merits of the drug when used with reasonable precautions.

Concetti, Louis: Hydatid Cyst of the Liver which Simulates a Movable Kidney. (*Annales de Méd. et Chir. Infant.* March, 1904, p. 167.)

In the course of an abdominal examination made on a little girl of six years, for some simple gastric trouble, an elongated swelling was discovered, a little to the right of the median line, the superior border hidden under the liver and the inferior extremity extending a little lower than the umbilicus. The tumor was hard, smooth and easily palpable through the thin abdominal walls. Mobility was marked, and there was no pain or tenderness; percussion gave a dull resonance, and no fluctuation was obtainable. In the genu-pectoral position, the tumor came in contact with the abdominal wall and the percussion over the right kidney region gave tympanitic resonance. The tumor remained stationary for several months. The ablest consultants agreed in the diagnosis of movable kidney. Suddenly, the child developed febrile attacks lasting twenty-four hours and separated by periods of ten to fifteen days. The urine assumed the febrile type with pus, being normal between the attacks. The tumor doubled its size. Everything pointed to a beginning pyelitis followed by a hydronephrosis. Operation showed the error in diagnosis. The tumor proved to be an hydatid unilocular cyst, adherent for 2 cm. to the inferior hepatic surface. After removal, cure was rapid and complete. Two years have elapsed and the little girl is in excellent health.

Spieler, Fritz: Acute Appendicitis and Perityphlitis in Children. (*Wiener Klin. Woch.*, January 7, 14 and 21, 1904, pp. 1, 40 and 71.)

The author has studied all the cases of appendicitis occurring during the past two years in the Karolinen Kinderspital in Vienna. These numbered 36. Of this number 27 were operated upon and in 23, or two-thirds of all the cases, the appendix had perforated, or was gangrenous. In 16 there was a general diffuse peritonitis before the operation. The author has made a most careful and detailed study of his cases and gives a very large and complete list of German and French references. The histories, gross and microscopical examinations of the appendix, and bacteriological findings are given in full of 14 illustrative cases.

From his study of the literature and his cases he comes to the conclusion that appendicitis is more common in children than in adults. The appendix in children is relatively longer and wider than in adults and fecal concretions, intestinal stones, foreign bodies, thread worms, etc., are more apt to become lodged therein. The appendix is also very rich in lymphoid tissue. This tissue is most frequently affected in childhood and the author thinks there is an analogy between inflammatory conditions of the tonsils and appendicitis which he would term "angina processus vermiformis." The age of his patients ranged from two to fifteen years.

The symptoms are very undefined in children. The diagnosis is beset with many difficulties, as it is often impossible to definitely localize the point of pain. Often the first sign of the trouble is a diffuse peritonitis. In children the severe diffuse form of appendicitis is commoner than the catarrhal form. This may be due to the abnormal position, form or size of the appendix, or to the high virulence of the organism causing the disease, or to the easy entrance of fecal concretions. The author, as a result of his observations, strongly urges immediate operation in all cases of appendicitis. The sooner the operation is performed the better. There is no surer form of prophylaxis against perforation and general peritonitis than an early removal of the appendix.

Rossi, Flavio: Primary Streptococcus Peritonitis in Children. (*Riv. di Clin. Pediatr.*, Vol. i., No. 9, p. 577.)

Rossi studied the rare form of peritonitis in children which is due to primary infection with streptococcus. According to Dieulafoy, of Paris, there are but 7 cases of this affection on record in medical literature. Rossi gives the histories of 3 cases reported elsewhere, and adds 1 case observed in his own clinic during the past year. The patient was a girl aged three years who was seized suddenly with the symptoms of an acute peritonitis. There was a high leukocytosis, but no iodophile reaction in the blood. An exploratory puncture was made in the abdomen, and the pus which was obtained presented an almost pure culture of the streptococcus pyogenes. Laparotomy was performed, the pus evacuated and the abdominal cavity drained. The patient made a good recovery. The author thinks that in this case the streptococcus entered through the respiratory tract, as the child had previously suffered from a bronchitis, but he admits that the bronchitis was not very severe, and possibly had nothing to do with the peritonitis. On the other hand, the follicular tonsillitis which the child was suffering from when admitted with the peritonitis, might have been the original source of infection in this case, although the author does not commit himself positively on this point. This form of primary streptococcus peritonitis is not distinguishable clinically from other forms of purulent peritonitis, and only an exploratory puncture, and subsequent cultures, can definitely determine the diagnosis. The exact determination of the pathogenic agent of a peritonitis is not important in practice, as the treatment should be surgical and prompt in all cases, no matter what the cause may be.

Cestan: Seven Cases of Retrocecal Appendicitis. (*Annales de Méd. et Chir. Infant.*, February 1, 1904, p. 94.)

One may summarize as follows:—

(1) Retrocecal appendicitis is relatively frequent.

(2) It is habitually recognized in its posterior position by the distention and pain, by the clear normal percussion note anteriorly and by the flexion of the thigh on the pelvis.

(3) It is complicated less than the other varieties by subacute septic peritonitis which declares itself brusquely at the onset. Inversely postoperative septicemia is more frequent.

(4) Careful watching, therefore, is especially indicated in these cases, and one should always try to avoid operation in hot weather. If this becomes necessary one should avoid opening the greater peritoneal cavity, often free from adhesions, and a postero-external incision should be practised, which allows the fossa to be approached subperitoneally.

Calot: Prognosis and Treatment of Coxalgia. (*La Pathologie Infantile,* January 15, 1904, p. 2.)

When discovered early, coxalgia can be cured without any defect; at the worst there is a slight stiffness of the hip without any limp. If there is an abscess, or some bone affection, the child will walk with some stiffness or a very slight limp. As to the date of cure, coxalgia without deviation, will take from six to twelve months. The variety with displacement and acute pains will last eighteen months to two years, and may terminate in an abscess. With an abscess the disease may last three months, while coxalgia complicated with bone affection will go on for three years or more; when accompanied by fistulæ, the course is from several months to several years.

Treatment.—The principal indications are:—Rest in the recumbent position, with good general treatment. The correction of the malposition, whether it be by continuous extension, traction under chloroform, with or without tenotomy, subcutaneous osteotomy, or a bloodless rupture of the tendons and bone. This is to be followed by the application of a good plaster cast. The puncture or injection of closed abscesses, aseptic dressing of fistulæ, or, if these are infected, drainage of the joint, sometimes with removal of the head of the femur.

HYGIENE AND THERAPEUTICS.

Marsh, James P.: A Case of the Epiphenomena of Diphtheria Antitoxin. (*American Journal of the Medical Sciences*, December, 1903, p. 1,019)

The writer calls attention to the fact that joint stiffness, endocardial murmurs and atypical symptoms of rheumatism may develop in addition to the urticaria which not infrequently appears from seven to fourteen days after injection. He also emphasizes the fact that occasionally the administration of antitoxin in diphtheria is followed by alarming symptoms.

The case reported was that of a patient thirty-nine years old who was given 1,500 units of the New York State Department of Health antitoxin on the fifth day after her throat became sore.

About ten minutes after receiving said injection the patient was taken suddenly with a feeling like sulphur fumes in the bronchial tubes, and could not breathe. She was said to have at once become very much cyanosed and semicomatose; her attendant thought that she was *in articulo mortis.* The patient said that at this time she felt a "numb" feeling extend over her body and that she could not see anything in the room. Next there developed a severe pain in the epigastric region, and the patient vomited, and immediately thereafter a severe itching, stinging rash came out all over the body. As the rash appeared the other symptoms passed away, and the whole process had lasted up to this time about fifteen minutes.

The writer saw the patient within two hours and found a general urticaria with the conjunctivæ swollen and injected so as to prevent opening the lids. The patient had always noticed that the eyes would become suffused and that she would sneeze violently when driving behind, or when close to, a horse; so that a special idiosyncrasy seemed to exist against contact with a horse or anything derived from that animal.

Pierce, R. W. C.: Epidemic Sore Throat and Suppurative Mammitis in Cows. (*British Medical Journal,* December 5, 1903, p. 1,492.)

In a report to the Woking Urban District Council, Dr. Pierce gives the results of his investigation of an epidemic of sore throat. An unusually large number of cases of sore throat, proved to be not diphtheritic, led the author to seek the source of the infection. After obtaining particulars as to the character and distribution of the cases, he suspected the milk supply as the source of the epidemic. In November, 1903, he visited several patients of one physician in the district and found some suffering from follicular tonsillitis, others from quinsy, and in many instances there was marked enlargement of the cervical glands, at times suppurating. There was very considerable constitutional disturbance in the way of headache, pains in the back and limbs, and fever. In several instances, also, there were joint pains after a few days, which was probably due to the extension of the infective matter into the joints. Unlike an epidemic of diphtheria, there was a distinctly larger number of adults affected than young children. There was a history in a great many instances of the throat affection having occurred in several members of a household, either simultaneously or in succession, which latter fact suggested that the illness was infectious. Several cases developed erysipelas of the face and neck, which were subsequently notified as such. On inquiring into the milk supply of the seven households thus visited, it was found that the supply of six out of the seven was obtained from two dealers. These dealers derived their milk, one from two sources, both without the district, and the other from five sources, four of which were outside the district. It was noted, however, that one of the sources was common to both. On November 12th, with the assistance of the sanitary inspector, visits were paid to about fifty houses where cases had occurred and doctors had been called in. Information was obtained altogether of ninety-eight infected houses, and out of this number it was found that no less than seventy-six obtained their milk from the two dealers in question—forty-eight from one and twenty-eight from the other.

The farm and cows of the two dealers were investigated; and it was found that not only had the farmer and other members of his family suffered from either quinsy or sore throat, but four out of twenty cows yielded milk that contained blood or pus.

Bacteriologic examinations were then made of the four samples obtained at the farm, as well as of the samples of the mixed milk from the farm as delivered to the two milk dealers. In single loopfuls, namely, about one-tenth of a drop of the liquids, distinct evidence was found of the presence of organisms—streptococci and staphylococci—similar to those usually associated with severe cases of sore throats, and resembling, if not the same as, those already found in swabs from the throats of persons affected. The liquids yielded by cows Nos. 2 and 3 consisted for the most part of pus such as would be contained in an abscess. It was the custom to send the afternoon's milk to Woking in the evening, and it was kept there overnight for distribution next morning. This keeping of the milk would contribute enormously to the growth of the organisms concerned, so that every drop would be thoroughly impregnated with the infection before it reached the consumer. Undoubtedly, the epidemic was due to the suppurative mastitis in the four diseased cows.

Ponticaccia, M.: Is Local Treatment Necessary in Diphtheritic Tonsilitis? (*Archiv. di Patol. e Clin. Inf.*, Vol. ii., No. 5–7, p. 148.)

If serum therapy is as efficient as it has proved to be, there is no necessity for the various local methods of treatment which have been so extensively used formerly. A great many modern writers still continue to recommend local applications, sprays, powders, etc., in diphtheria. In order to determine the efficiency of local treatment in diphtheritic tonsillitis, the author inaugurated the following experiment:—No local treatment whatever was used in any of the cases of diphtheria which were treated during the eighteen months ending in May, 1903, in the Municipal Hospital of Venice. In other words no local manipulations whatever were permitted in these cases with the exception of the use of platinum loops for cultures and the detachment of a piece of pseudomembrane in cases in which the entire throat was filled with exudate so as to impede respiration. There were altogether 175 cases thus treated, and of these 12 died—a mortality of 6.8 per cent. Moreover, of these deaths three occurred in patients who were brought in moribund, and in whom it was impossible to judge the effects of any treatment. It seems, therefore, that local treatment is not necessary in diphtheria, save, of course, in cases requiring intubation, tracheotomy, etc. The author admits, however, that a more extensive series of observations is necessary in order to arrive positively at this conclusion.

Guida, T.: The Specific Nature of the Various Albuminoids of Milk. (*Archiv. di Patol. e Clin. Inf.*, 1903, Vol. ii., No. 5–7, p. 129)

It was formerly believed that milk contains but one proteid substance, namely, casein, but of late Schlossmann has asserted that there exists a second proteid characteristic of milk, namely, lactalbumin. Recently, Schlossmann and Moro instituted a series of researches in order to determine whether the milk of each animal contains some specific proteid substance peculiar to itself. These observers found:—(1) That the serum of a rabbit that had received an inoculation of cow's milk gives a precipitate in the presence of a solution of casein and lactalbumin from cow's milk, while solutions of these substances from the milk of other animals do not produce any precipitate in this serum. (2) After an inoculation of woman's milk the serum of a rabbit remains unaffected by the addition of a solution of casein from cow's milk. (3) The serum of a rabbit inoculated with lactalbumin from cow's milk is most sensitive to lactalbumin from cow's milk, but does not react to lactalbumin from woman's milk. The same observers have also shown that the lactalbumin of an animal's milk is identical with the proteids contained in the blood of the same species of animals, at least so far as has been determined in the species investigated. The important conclusions from these researches are as follows:—Lactalbumin is probably the proteid of woman's milk, which, above all, gives nutriment and contributes to the development of the child. This substance has a biological specificity and can penetrate directly into the organism without being first chemically altered. On the other hand, the lactalbumin of the cow must be assimilated before it enters the organism, and first be chemically changed, especially if it has been boiled before ingestion.

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THE FEEDING AND CARE OF CHILDREN AFTER THE FIRST YEAR.*

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The *régime* for the first year of life has been often fully discussed and a fairly general agreement of opinion has been reached as to the amount of rest needed, the facilities for exercise and the best method of feeding. Although we may not all agree as to the time when cereals should be added to milk, or the rapidity with which the formulæ should be run up, still our best books as a rule follow pretty much the same system, and all agree that during the first year modifications of milk with or without cereal may be used and that by the end of the year whole milk may usually be fed. Occasionally one may find a baby still at the breast at the beginning of the second year, but such is very rarely the case. While it is now customary with the more intelligent and methodical practitioners to watch carefully not only the feeding but the weight, certain measurements, the eruption of the teeth, etc., during the first year, all such observations are apt to be neglected during the remainder of childhood, although the observation and recording of such data may often be of the greatest importance in the intelligent care of the child. It cannot be assumed that a child that comes under our care during the second year has been vaccinated, has been taught to urinate in a vessel or to have its bowels move at a regular time in a vessel or that a male child has had its foreskin forcibly retracted or circumcised, this latter essential hygienic measure being usually entirely neglected.

The child at the beginning of the second year should be able to stand and walk beside a chair, should measure about twenty-nine inches in length, should weigh about twenty pounds, should have six incisors and should have a stomach capacity of about twelve ounces. This is followed during childhood by an annual growth in length of about three inches each year and a gain in weight of about five pounds each year. These amounts being a little larger for the second than for subsequent years. We thus reach a period at about the sixth year when the length in inches and weight in pounds should be equal.

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* Read before the Philadelphia Pediatric Society, May 10, 1904.

We should examine these children not only for evidence of normal development but for defects of symmetry, for curvature of the spine, defective vision and hearing.

In examining systematically the ninety pupils of a private school in New York, attended by the children for the most part of intelligent and wealthy parents, many of these children being under the care of our best physicians, I found 43 or nearly 48 per cent. with slight curvature of the spine which in a number of cases was due to a difference in the length of the legs which needed correction. Seven of these cases were serious and are now being treated by specialists. There were 31 or over 34 per cent. with defective vision of one or both eyes, of these 15 were wearing glasses, 6 were ordered glasses by oculists after their condition was reported to the parents, while in 10 the defect was not sufficient to require glasses. There were 2 or 2 per cent. with defective hearing which was receiving attention.

It is interesting to note that none of these children showed any evidences of neglected adenoids. Among these ninety children whose parents were anxious to give them every care and advantage, seven had serious spinal curvatures which needed correction, but had not been previously recognized, and six had serious defects of the eyes which needed correction by glasses. Are we as physicians worthy of the confidence of the parents who place their children in our charge when we allow them to suffer from such defects without acquainting ourselves of the fact and applying promptly proper treatment? Are we not practising in a very narrow sense when we treat only the sore throats and indigestions of the child and pay no attention to systematic examinations or to the general development of the child?

The development of the power of locomotion at the beginning of the second year enlarges enormously the dangers of infection to which children are exposed. Throughout the first year their heads may be kept on a clean pillow or they may be kept on a sheet, the swinging of the legs and arms in the air providing sufficient exercise, and thus they may be kept away from dirt and dust and its dangers, and, as a matter of fact, in well-cared-for children infections are rare during this period. At the beginning of the second year we have in the baby a greatly increased resistance to infections, but an exposure increased out of all proportion to the increase of resistance. The exposure becomes greater with locomotion but is again increased when the child is placed in classes in kindergartens or elsewhere.

In order to secure the best results in the care of these children one must control (*a*) the feeding; (*b*) the rest; (*c*) the exercise; (*d*) the ventilation and exposure to fresh air. If any one of these is neglected our results will be correspondingly less satisfactory.

Before suggesting any fixed dietary to be adopted for children of different ages, I wish to state that I quite agree with many physicians who hold that each child should be a subject for special study as to the amount and sort of food it needs, but I believe that a very large proportion can be kept satisfactorily on the sort of dietary I shall recommend and will do better on it than on other foods.

The three indications which I believe are the best exponents of well-being in children, are a healthy complexion, a clean tongue and well-digested movements, and that children in which these indications are by careful *régime* and digestible and nourishing diet preserved are not the children that have those most prevalent disorders of children, bronchopneumonia in winter and gastroenteritis in summer.

As a rule I believe, children are fed after the first year, too often, and on too great a variety of food and with too little milk. The secret of successful feeding throughout childhood is to keep your charge largely on milk. It is a general opinion and a very proper one I believe, that by the beginning of the second year a child should be allowed other food than milk, and it has been my custom at this time to begin feeding with a spoon. The child is already having feedings of from 8 to 10 ounces of milk or some modification every four hours, at 6 and 10 A.M., and 1, 5, and 9 P.M.

What indications have we at the beginning of the second year for any change of food from a simple milk diet? There is a demand from the mother for other food often for meat. There is the frequently quoted opinion that as soon as a baby has its teeth it should be given something to chew. This claim may, however, be well answered by the statement that the six incisor teeth a child usually has at the beginning of the second year are not chewing teeth and it is not until six or nine months later that a child is supplied with teeth intended to grind food into small particles. At fourteen months a child usually has only its eight incisor teeth, while at eighteen months it has only four molars. It is only at eighteen months then that a child with normal dentition is able properly to grind food. It must be agreed that there is but little indication for a change in food and that a simple milk diet may often be continued into the second year with advantage. There are, however, certain benefits in an enlarged dietary at this time. A child must be gradually accustomed to take its food from a spoon instead of from the bottle preparatory to taking solid food and again at this time many children suffer from constipation which may be somewhat relieved by a change in diet.

In choosing the first food to be added to the milk diet the matter of its nutritive value need not be particularly considered since the 40 or 50 ounces of cow's milk already fed furnishes sufficient nourishment. The food then should be such as can be eaten with a spoon and that will not displace the milk but render it more, rather than less, digestible. This requirement seems best filled by one of the many cereals, a finely ground or strained cereal thoroughly cooked being used first. Thus about 4 ounces of a thick strained oatmeal gruel or a wheat meal may be added to the midday meal and ½ an ounce of orange juice may be given, also. It is a safe precaution to add ½ an ounce of orange juice daily to the dietary of all children of six months or over. Our dietary at twelve months will consist then of 8 ounces of milk pasteurized, at 6 and 10 A.M., and 1, 5, and 9 P.M., to which is added at one o'clock 4 ounces of gruel and ½ an ounce of orange juice.

DIET OF THE SECOND YEAR.

	6 A.M.	10 A.M.	1 P.M.	5 P.M.	9 P.M.
At 12 mos.	8–10 oz. milk.	8-10 oz. milk.	4 oz. gruel. 8 oz. milk ½ oz. orange juice.	8-10 oz. milk.	8-10 oz. milk.
At 15 mos.	8 oz. milk. 6 oz. gruel.	8 oz. milk.	Soft boiled egg. 8 oz. milk. ½ oz. orange juice.	8 oz. milk. 6 oz. gruel.	8 oz. milk.
At 18 mos.	8 oz. milk. 6 oz. gruel.	8 oz. milk.	4 oz. clear soup. Soft boiled egg. 8 oz. milk. ½ oz. orange juice. Bread and butter.	8 oz. milk. 6 oz. gruel.	8 oz. milk.
At 21 mos.	8 oz. milk. 6 oz. gruel. Soft boiled egg. Bread and butter.	8 oz. milk.	6 oz. clear soup. ½-1 oz. scraped beef ½ oz. orange juice. Bread and butter.	8 oz. milk. 6 oz. gruel. Bread and butter.	8 oz. milk.

This diet may be continued for some time, but usually by the fifteenth month a soft boiled egg may be given each day with the one o'clock feeding. This furnishes a nourishing, easily-digested proteid food. The cereal is now transferred to the 6 A.M. and 5 P.M. feedings, and it may be a more coarsely ground cereal. The child thus gets three meals each day with two additional feedings of an 8 ounce bottle of milk each at 10 A.M. and 9 P.M.

For the next six months no change need usually be made in this dietary, except, perhaps, the addition of 4 ounces of clear soup, beef, mutton or chicken, to the mid-day meal with a slice of dry bread and butter. It may be noted that no mention has been made of beef juice which is often given at this time. Beef juice should not form a part of the dietary of any normal healthy child, for it has scarcely any food value, as it is composed for the most part of extractives and water. It is, however, a good tonic and a useful addition to the dietary of a child that has a poor appetite or is anemic or convalescing from some acute disease. Its use should be reserved to cases that furnish some such indication.

At about the twenty-first month some meat may usually be added to the mid-day meal with advantage. It should be given first in moderate amount and in the most digestible form. Scraped beef from the inner portion of a rare broiled steak which is free from fat is the best form, and a heaping tablespoonful may be given at first and the amount soon doubled. When this is given with bread the child should be instructed systematically to chew. At this time the soup may be increased to 6 ounces and the milk dropped, for as a rule I believe milk is not well digested when given at meals with meat. The amount of meat given should be carefully restricted, as many children, especially pale children, are often given too much meat. This addition of meat then completes the dietary for the second year and the articles of food I have mentioned are all that should ordinarily be given at this period. The use of cream, of stewed prunes, of apple sauce and many such articles, that are often fed at this time, in most cases disturbs the digestion. The addition of cane sugar to the cereal of children should never be allowed. With the addition of other foods to the dietary it is often reported that children will not take milk. The method of dealing with such cases is important. There is no question but that milk is the best food for them and when it is a question between no milk and only milk the latter alternative should be selected. The children that object most to milk are those that are given stewed fruit, cake, and candies and other improper articles of food. Properly exerted suggestion will always solve this problem. There is usually little use in trying to force them, but a clever mother or nurse can always lead these children back to a proper appreciation of milk, if the milk given be a clean, palatable milk and as much care should be given to securing a milk from a carefully supervised farm for these children as for children during the first year, and it should, I believe, be pasteurized so long as the child is on a diet for the most part of milk. During all of this second year care should be exerted to give the child water once between feedings or best an hour before each feeding.

With the beginning of the third year the 9 P.M. feeding can well be eliminated. The child can take sufficient supper so that it does not need more food until the next morning, and the digestion of the child is strengthened by this thirteen hour fast. This recommendation is contrary to the teachings of some of our prominent pediatrists but it has seemed to me of distinct advantage.

DIET OF THE THIRD YEAR.

6. A.M.	10 A.M.	1 P.M.	5:30 P.M.
Orange juice. 10 oz. milk. 6 oz. gruel. Soft boiled egg. Bread and butter	8 oz. milk.	6 oz. soup. Meat. Bread and butter. Vegetables. Dessert	10 oz. milk. 6 oz. gruel. Bread and butter.

Our diet then during the third year will consist of a breakfast at 6 A.M., a bottle at 10 A.M., a dinner at 1. P.M., and a supper at 5 P.M. The orange juice should be continued and the juice of one orange may be given with breakfast followed by 10 ounces of milk, about 6 ounces of any well cooked cereal, an egg which may be soft boiled or shirred and bread and butter. The ten o'clock feeding should consist of no more than 8 ounces of milk. The dinner may consist of 8 ounces of clear soup, 1 to 2 ounces of meat, which may be beef or lamb or chicken or turkey, lean and without gristle or skin and finely cut, not scraped, and care should still be exerted to see that the child chews it. A small amount of fairly dry bread may be given. Well-boiled rice may be added or some vegetable. The first vegetables given should be put through a cullender so as to be in the form of a pulp. In this way fresh peas or fresh string beans or lima beans or stewed celery may be given. Squash or potato mashed may be given later, as may spinach which has been put through a cullender. Altogether the best dessert is junket which fortunately is popular with the little ones, but it may be alternated with rice pudding, custard or, occasionally, a little ice-cream if these are not too sweet. The amount should be regulated so that the total bulk of the meal should not exceed that of a pint of water. The supper should continue a simple meal of 10 ounces of milk, 6 ounces of gruel with bread and butter. Three meals a day are sufficient for a child after the third year and these meals should throughout childhood follow the type of the meals indicated for the third year.

The usual lunch served at schools to many of the children, at 10:30 or 11 A.M., often spoils the appetite for the mid-day meal and always makes too frequent a call on the gastric digestion. After the third year a child can with advantage fast a longer time at night, from a 5 or 5:30 P.M. supper to a 7 or 8 o'clock breakfast. The general type of the three meals of the third year should be continued with slight additions to the dietary as well as increased amount but continuing up to the tenth year with but little change.

DIET AFTER THE THIRD YEAR.

BREAKFAST, 7–8 A.M.	DINNER, 12–1 P.M.	SUPPER, 6 P.M.
Fruit. Cereal. Milk. Bread and butter. 1 or 2 eggs.	Soup. Meat. Bread and butter. Vegetables. Dessert.	Cereal. Milk. Bread and butter.

Children of this age usually begin to have some of their meals with the family, the breakfast may be so taken at 7 or 8 A.M., as may the dinner at 12 to 1 P.M. The evening meal is always better taken alone as it should be served early and should always be most simple. The fruit at breakfast may be of greater variety. The juice of grape-fruit and grapes may be the first additions. Baked or stewed apples should be given with caution, and without much sugar and with no cream, and raw apples with still greater caution. Stewed prunes and berries may be given to some children but they are liable to upset them. Jams and preserved fruits are also apt to make trouble. The cereals given to children at this time admit of the greatest variety, the only important provision being that they should be thoroughly cooked, the ordinary grains needing usually about six hours' cooking and the prepared foods may safely be cooked four times as long as the directions on the package state. Six or eight ounces of milk should be taken on the porridge and an equal amount drunk from a glass. Bread may do children much harm if not properly selected. All hot biscuits and fresh breads should be forbidden during the early years. The same is true of muffins, waffles and pancakes. Butter may be given in moderation. It is unnecessary to enumerate the list of forbidden foods, but one may roughly summarize by saying that all fried and greasy food, all stews and hashes, most raw vegetables and fruits, all pies and cakes and candies and most sweets should be excluded from the diet, and it may be added that the more the dietary is enlarged from that I have indicated the more difficult it is to induce the child to eat the food that is most nourishing and easily digested. The harmful results of the use of alcohol in the dietary of healthy children cannot be too strongly emphasized.

A great deal of rest in a horizontal position is essential for the well being of a child. They should sleep soundly from 6 P.M. for twelve hours but this is not sufficient to carry them through the day. During the second year they should enjoy two periods of rest during the day, one in the morning and another early in the afternoon, and throughout the first decade a nap after lunch with twelve hours at night will improve their general health and resistance to infections. Moreover, during their hours of wakefulness they should be kept from excitement, particularly during the late afternoon hours when great mental activity will interfere with sleep. All children are provided with very delicate nervous systems. The fact that the slamming of a door, as quoted by J. Lewis Smith, has sent the temperature of an apparently healthy child to 105° F. is an instance of this fact.

Lack of rest manifests itself in many ways. Constipation and nocturnal enuresis in children are often symptoms of neurasthenia and are cured only by taking the child away from a nervous mother or nurse. A case of nocturnal enuresis recently under my care was soon cured by putting the child under the care of a trained nurse. When after six weeks without wetting, the nervous mother resumed its care, she noted that immediately the child began to micturate much more frequently and that the urine was very clear and watery looking and the habit of enuresis was resumed.

Provision for regular and systematic exercise for children is rarely well planned, although it is essential to their proper development and the healthy preservation of many of their functions. Such exercise promotes muscular development and when properly regulated stimulates the appetite and aids digestion. It is, moreover, a very valuable agent for overcoming what is perhaps one of the most common and obstinate derangements of many well-cared-for babies, constipation. A child of two years at present under my care has been obstinately constipated, passing daily hard masses, the character of which was only moderately modified by the ordinary doses of laxative, and when neglected was followed by attacks of intestinal derangement, characterized by fever and undigested movements. A teaspoonful of the aromatic fluid of extract of cascara was required to properly move this child's bowels. The child's mother never left the house except in a victoria or coupé and often stated that she never could walk and that her child was like her. The trained nurse in charge of this child was directed to massage its abdomen with a dry hand, night and morning, and to see that the child got a great deal of exercise. She took the child for walks aggregating from one to two miles during the course of the day, and played games with it which required it to run from the front to the back of the house. As soon as this treatment was adopted the child's bowels moved each day without the use of cathartics.

At the beginning of the second year such exercise may be provided for by putting the child into the enclosure of a large sized nursery fence. In this a fair amount of exercise may be obtained by crawling and by standing against it. In addition to this every child should at this age, I believe, be provided with a baby jumper, a contrivance which, when properly adjusted, allows the child to travel from one part of the room to another without having to support the weight of its body. It prevents going through a doorway or to an open window. As the child begins to walk more exercise may be obtained by going from room to room. Care must be taken that children at this age are not allowed to walk too far without rest on account of the danger of breaking down the arch of the foot. Many children, particularly of the poorer classes, are undoubtedly injured by being taken out by their mothers and dragged about when they are not old enough to walk far without tiring. For older children the bicycle, horseback riding and tramps in the country should be advocated.

Of the hygienic methods which I have enumerated for the preservation of good health in children, the one which is universally most difficult to enforce is the exposure to fresh air. People are so timid about draughts and the danger of catching cold and are so accustomed to live themselves in hot rooms, ventilated only by an open doorway leading into a hall, that such fresh air, no matter with what arguments it is advanced, strikes the parents as a dangerous expedient.

The remarkable success with which many incubator babies can be brought up has seemed to me due to the facility with which we are able to furnish them with these requisites for good health. Their feeding is usually breast milk, the attendant a reliable trained nurse, the closed incubator shuts off the noises of the room and allows them absolute rest. The absence of tight clothing allows such little exercise as their instincts demand, while the fresh air inlet conveys to the incubator a rapid current of air from out of doors which has the dust filtered out of it by absorbent cotton and although properly warmed as necessary, at the same time contains its proper amount of oxygen and passes out at the opening at the top of the incubator as soon as it is exhaled.

Every child over a year old in fair health should be kept in absolutely fresh air the greater part of the twenty-four hours. The sleeping room should always have a window open even in cold weather, for their bodies can easily be kept warm by ample covering and during the day they should be kept out of doors both morning and afternoon.

It is customary to keep children in the house if the weather is damp, but as a large proportion of our days in New York are damp, children so restricted are out of doors much less than they should be. Damp days I believe do most children no harm, while the outing always does them good. The only days that are really bad for susceptible children to be out are the days when it actually rains or days when it is blustery and dusty. If on such days only children are kept in the house there are but few days in the year when they cannot be out for a while at least and their outing may be simulated on such days by putting on their coats and hats and having them play in a room with the windows open and the doors closed.

Summary.—Systematic examinations of all children under our charge should be undertaken at regular intervals, and should include the level of the shoulders and hips, the spine, eyes, ears and throat.

During the second year a child should be fed five times a day; the diet at the beginning including only milk, gruel and orange juice, to which later may be added an egg, soup, bread and butter, and at the end of the year meat. Beef juice should be used only as a tonic.

During the third year but three meals should be given, with an extra bottle of milk at 10 A.M.; the articles of food being continued with the addition of certain vegetables and simple desserts.

After the third year but three meals a day should be given, including the same articles of food, and throughout childhood about one quart of milk should be taken daily and the evening meal should consist only of cereal and milk and bread and butter. Both the variety and amount of food must be carefully restricted.

Children during the second year should sleep twelve hours at night and have a morning and afternoon nap each day, and throughout childhood should continue to sleep twelve hours at night with one nap during the day.

Provision for the exercise of children should be carefully planned. At first by the use of the nursery fence and baby jumper and later by systematic walks for short distances at a time, and still later by bicycling, horseback riding and tramps in the country.

Throughout childhood they should be kept as much as possible out of close and crowded rooms. When in the house the room should receive ventilation from out of doors and they should be kept in the absolute open air several hours each day.

A New Stain for the Malarial Parasite. — Josef Koreck (*Deut. med. Woch.*, April 23, 1903) gives the following stain for the malarial parasite: Argentum methylene blue, 1 g.; aceton, 2 g.; distilled water, 10 cc.; eosin, 8 to 1.5 g. The argentum methylene blue is made by adding .5 g. of collargol to 100 cc. of a 1 per cent. aqueous solution of methylene blue. The smear is fixed by any of the usual methods and submitted to the action of the stain for a varying length of time depending upon the age of the staining solution. If the latter has been freshly prepared nearly one-half an hour is necessary, but if it has been allowed to age a much shorter time will suffice. In any given instance the proper time can only be ascertained by repeated trials. The advantage of the method is the sharp differentiation given by it between the red blood cells and the parasites, so that when the latter are ill defined with other methods they are plainly brought out by this one.—*Medical Record.*

THE ALBUMIN CONTENT OF WHEY.

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During the past decade the scientific preparation of food for infants has made much progress. Among the many different combinations of milk and its modifications, the latest to receive special attention are the cream and whey mixtures. The use of whey as a constituent of infant foods seems at least to be worthy of thorough consideration. The fact that in whey we have a solution of not only lactose, but also of albumin and that the albumin is largely of that kind which most resembles the albumin found in human breast milk, offers strong argument for the use of whey in the form of whey mixtures.

Whey is an opaque liquid of light greenish-yellow color and in odor and taste is not unlike milk. The specific gravity varies from 1.020 to 1.030. The fat is nearly all removed in the curd, that left amounting to about 0.35 per cent. The sugar amounting to 4.5 per cent., as is seen, is little altered by the curding process.

The all important constituent is the albumin. This appears in three forms, casein, lactalbumin and lactoglobulin. The amount of casein varies with the completeness of the curding. Since of these three albumins the casein is the one to offer the most resistance to the digestive juices of the alimentary tract of the infant, it is evident that the more thoroughly this is removed, *i.e.,* the more complete the curding, the more suitable will be the whey for infant feeding.

The percentage of albumin found in whey varies according to different writers. The following is a representative list of the variations.

König[1]	0.8600
Smetham[1]	0.8800
Vieth[1] (from skimmed milk)	0.9200
U. S. Dept. of Agriculture[2]	0.9312
Rupp[3] ....about	1.0000
Fleischman's[1]	1.0000
White and Ladd[4]	1.0200

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[1] Richmond, Dairy Chemistry, London, 1899, p. 299.

[2] U. S. Dept. of Agric. Exp. Sta. Rec., 1895-6, Vol. VII., p. 160.

[3] Rupp, Die Untersuchung von Narhungsmitteln, Genussmutter und Gebräuchsgegenständen, Heidelberg, 1900, p. 9.

[4] White and Ladd, Phila. Med. Jour., 1901, Vol. VII., pp. 218-223.

These various results differ so materially from those obtained by me that it seems proper to publish in detail the methods used in the determination of the amount of albumin.

The milk used was skimmed milk and was obtained from Gurler's dairy. It was considered to be the purest and most stable in the point of its various constituents to be secured. The whey was prepared in the kitchen of the Pediatric Department of Northwestern University Medical School which is in charge of the Training School of Wesley Hospital.

The preparation of the whey was as follows:—The skimmed milk was heated to 106° F., and the rennet* added in the proportion of 1 grain to the quart. The milk was then stirred well for a moment and allowed to stand without any agitation for thirty minutes. The curd was then broken up and removed by filtering through a wire sieve and the filtrate (whey) heated to 150° F. to destroy the enzyme.

In some cases, the whey while still warm was taken to the laboratory, in other cases it was allowed to stand over night in an ice-box. No perceptible variations were noticed which could be ascribed to the difference in temperature.

On being brought to the laboratory the whey was filtered through Swedish filter paper, the sediment being noticeably small in amount. To 25 cc. of this filtrate was added 1 cc. of acetic acid (25 per cent.) and 3 or 4 drops of ammonium hydroxid (10 per cent.) and distilled water to make about 100 cc. The whole was boiled thoroughly (stirring all the time) and then set aside until the coagulated albumin had settled. In case the supernatant liquid was not clear the boiling was continued until sedimentation was complete.

The clear fluid was decanted through a Gooch crucible under traction from a Bunsen pump. To the albumin left in the beaker more distilled water was added and the whole heated (but not to boiling) for about one-half hour when it was set aside to precipitate. The supernatant fluid was again decanted through the Gooch crucible. This same process was repeated. At the third decantation the albumin was allowed to pass into the crucible and here was washed three times with distilled water. The crucible was then placed in an oven and dried at 105° C. for two hours at the end of which time it was cooled and weighed. It was then returned to the oven for one-half hour and again weighed, the procedure being repeated until no difference between weighings was registered.

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* Parke, Davis & Co.'s, and Armour's preparations.

The filtrate of the various decantations was repeatedly tested with Tanret's mercuric-potassium iodid solution but gave only a slight cloudiness which might possibly have been due to other constituents of the whey. Even if the cloudiness was due to albumin it would have no practical value since such a result may be obtained in albuminous solutions of 1 to 25,000, so that at most the amount of albumin left in the filtrate would be so small as to in no way influence the results.

The following results were obtained during the months of July and August, 1903, in the Laboratory of Physiological Chemistry of Northwestern University Medical School under the supervision of Professor J. H. Long, and his assistant, Mr. Johnson.

.4944	.4336	.5032	.2928	.6096
.4678	.5212	.4656	.5272	.5320
.4352	.5316	.4608	.6616	.5664
.3004	.4744	.4248	.5120	.5528
.3092	.5784	.3544	.6456	

Average, .5013 Low, .2928 High, .6616

The low percentage of albumin recorded in the foregoing table is surprising, and in view of the results of former experiments demands explanation.

The only writers whose experiments were recorded fully enough to admit of comparison and whose report could be obtained by the writer were White and Ladd. It is highly probable that a large majority of experimenters have used the Kjeldahl process on whey which has been prepared by the use of liquid rennet.

Three chief sources of variations present are: (1) the milk; (2) the method of preperation of the whey; and (3) the method of determination of the amount of albumin.

The possibility of any marked variations in the kind of milk used is so remote as to justify one in ignoring it.

The method of preparation of the whey offers more chances for difference. White and Ladd found that there was a slight variation in the amount of albumin recorded, dependent upon the degrees of heat used in destroying the enzyme; but these were only in the hundredth of a per cent. and this would not account for the difference of their results from my own. Besides in the whey used in these experiments after curding and filtering the filtrate was heated to 150° F., although that used by White and Ladd where the albumin amounted to 1.02 per cent. the filtrate was heated to 149° F. (65° C.). The second point of interest in the preparation of the whey is in the kind of rennet used. It seems evident though not definitely stated that a liquid preparation was used by White and Ladd. Such preparations of rennet are put up in alcoholic or glycerin solutions and it is not at all improbable that the presence of these drugs may inhibit the action of the rennet or there may be differences in the strength or character of the liquid, and the powdered rennet which account largely for the variations in the results obtained.

One other point of difference lies open, the method used in determination of the amount of albumin. White and Ladd used the Kjeldahl process in which the amount of NH_3 gas produced by a known portion of the whey is measured, the amount of N determined, and this calculated as constituting 16 per cent. of the total atomic weight of the albumin molecule. Of course there is always doubt about the exact composition of the albumin molecule and in this much there is a source of error in the Kjeldahl process, while in the gravimetric method used by the writer no such possibility is offered. The error here, if there be one, would in all probability not account for the difference in the statistics recorded.

We have left but one conclusion to draw from the foregoing that is, that the kind of rennet used is the most important factor in the preparation of whey, in as much as it is responsible for the amount of casein curdled. The more perfect the curding of the casein the more desirable the whey for infant feeding since the remaining proteids are easily digested by infants. Practically it is of some importance to determine this point, especially since cream and whey mixtures have of late taken so important a position in the infant food preparations.

I wish to thank Dr. F. X. Walls for his kind assistance and suggestions.

New Children's Hospital in Milwaukee. — Mr. and Mrs. H. H. Camp have given the Camp homestead as a foundation for a children's free hospital in Milwaukee. About $10,000 will be spent in alterations. Among the novelties will be a special serving room, from which meals can be served direct to occupants of the surgical wards. The remainder of the $25,000 subscribed by friends will form a nucleus of an endowment fund.—*N. Y. Medical Journal.*

UMBILICAL CORD HERNIA.

BY MARTHA WOLLSTEIN, M.D.,

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Cases of hernia funiculi umbilicalis may be divided, broadly, into two classes:—those in which the intestines only are contained in the hernial sac, and those in which other viscera, especially the liver, lie outside the abdominal cavity proper. Many of the latter must be classified, according to Marchand[1], as cases of eventration or ectopia viscerum, when the umbilical opening is so wide that the larger part of the abdomen, with or without part of the chest, remains open, and the amniotic sac contains most of the abdominal viscera. Such cases are frequently accompanied by lordosis or scoliosis. The difference between the two varieties is one of degree, as regards the extent of ventral body wall remaining undeveloped.

The frequency with which this malformation occurs is given by Lindfors[2] as 1 in 5,184 births occurring at the Munich Maternity Hospital between the years 1862 and 1881. Block[3] records 1 in 5,000 births at the Berlin Charité, and Vienne[4] did not meet with any instance among 3,043 births observed at the Paris Charité. Rogier[5] states that it occurs in 2.7 per cent. of all newly-born infants. The following is the only case of the kind which has been admitted to the Babies' Hospital:—

B. M., two days old, male, a twin, was born fifteen minutes after the other child. His family history was good. On admission the infant was small and poorly nourished, weighing 3 pounds and 2 ounces. His temperature was 95° F. The lungs were clear. At the umbilicus was a tumor as large as a small pear. The skin was sharply demarcated from the thin and glistening covering of the pear-shaped mass at a point one quarter of an inch from the abdominal wall. Large vessels ran over the upper surface into the cord stump at its apex. The urethral opening was situated on the dorsal side of the penis. No urine had been passed since birth. (See Fig. I.)

During the next day he vomited everything administered; vomitus green and thin. Two stools of meconium. No urine was passed.

The second day after admission he urinated once, the urine being dark in color. Temperature 98° F. He died at 7 A.M. The condition since admission had been such as to make the consideration of any operative procedure impossible.

A complete autopsy could not be obtained, permission for a small abdominal incision only being granted.

The umbilical tumor, elliptical in shape, measured three inches in height by three and a half in circumference. It was covered by a pale, glistening coat resembling Wharton's jelly, in which two large vessels ran toward the apex, where a stump of umbilical cord was attached.

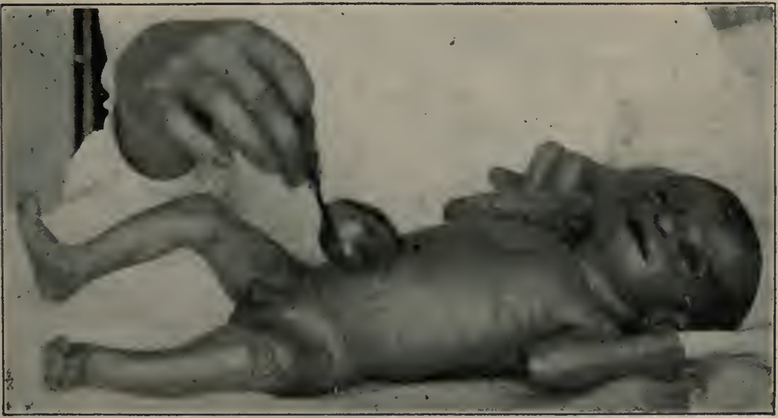

FIG. I.—HERNIA FUNICULI UMBILICALIS.

The rectum, sigmoid flexure, descending and transverse colon were normal in position and size. The ascending colon entered the hernial sac, but was readily withdrawn. The cecum with the vermiform appendix and three inches of ileum were held firmly bound within the sac, partly by fibrinous adhesions and partly by the tightness of their coils. The prolapsed ileum showed a Meckel's diverticulum half an inch in height. This diverticulum and the vermiform appendix lay along opposite sides of the sac, their apices turned toward each other. (See Fig. II). The peritoneum lining the sac and that covering the contained intestines was dark red in color, roughened and covered with a thin exudate of fibrin. There was no pus, and no general peritonitis.

The liver and spleen were normal in size and showed no malformation.

Anatomical Diagnosis.—Hernia funiculi umbilicalis containing cecum, vermiform appendix, ileum and Meckel's diverticulum. Localized fibrinous peritonitis. Hypospadias.

On microscopic examination the covering of the mass was composed of three layers:—the outermost was a thin layer of fibrous connective tissue, upon which no covering epithelium could be distinguished, due, no doubt, to beginning maceration. The middle layer consisted of myxoid tissue resembling Wharton's jelly. This was lined by white fibroid connective tissue densely infiltrated with polynuclear leukocytes and fibrin, and having on its free surface a thin layer of granular fibrin entangling some nuclear fragments. The sac thus showed the classical structure of amnion, Wharton's jelly and peritoneum, the last named coat being the seat of a fibrino-purulent inflammation.

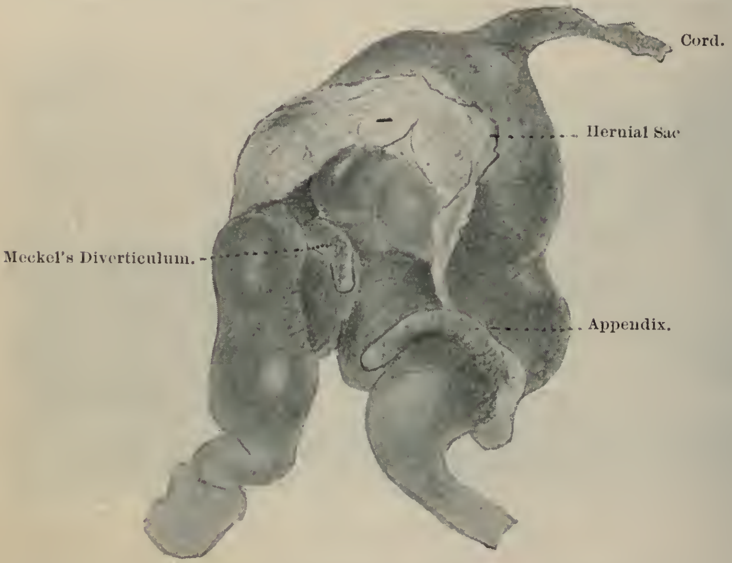

FIG. 11.—SAC AND CONTENTS—UMBILICAL CORD HERNIA.

Hernia into the umbilical cord is frequently accompanied by other malformations:—anencephalus, spinal curvatures, spina bifida, club-foot, persistent cloaca, atresia ani, multiple intestinal atresia and exstrophy of the bladder have all been recorded.

The hernia varies in size, and may prove an obstruction to delivery. Its coverings consist of three layers:—amnion, Wharton's jelly and peritoneum. Calbet[6] reports a case in which no sac was present, the stomach and entire intestinal tract, except the rectum and part of the sigmoid lying outside the body walls, "bathed in the amniotic fluid." The sac may be ruptured during delivery.

The contents vary. A few loops of small intestine alone may be present, or the cecum as well as most of the large intestine may be in the sac. The stomach, pancreas (Boggess[7]) spleen, liver and kidneys have all been found outside the abdominal cavity. Cases in which the heart and part of one lung are prolapsed must be classified as true eventration.

The umbilical cord is inserted at the apex of the mass; when the liver is contained in the sac the cord is usually found attached on the left side, rarely on the right.

Since the first case of the kind was recorded by Storch in 1751 various theories have been advanced to explain this malformation, which is a lack of development of the body wall. Thus Cruveilhier[8] assumed too great a curvature in the position of the embryo. Peritoneal adhesions were looked upon as the cause by Simpson[9]; strong traction on the umbilical cord by Müller[10]; deficient development of the abdominal muscles by Scarpa[11] and Richter[12], and an anomalous "anlage" of the liver by Aschoff[13]. Ahlfeld[14] lays much stress upon the prolonged retention of the intestine in the umbilical cord.

Rischpler[15] studied 3 cases of eventration and believes that abnormally extensive adhesions between the amnion and the chorion are the cause of both the spinal curvature and the eventration, these taking place at a very early period of embryonic life. In this belief he follows Marchand,[1] who thinks that in every case of umbilical cord hernia abnormal traction must have been exerted, and that this can have come only from the amnion or the yolk-sac. In other words, abnormal adhesions between the amnion or the yolk-sac and the chorion are the cause of the inhibited development of the abdominal walls which lead to the formation of a hernia into the umbilical cord. Hallet[16] believes that Marchand's interpretation holds good for some cases, but that his case (which is very similar to the one here reported), is due to the abnormal persistence of the vitelline duct, which held the loop of intestine to which it was attached outside of the abdominal wall. The increase in the growth of this prolapsed intestine serves to keep the umbilical ring open and also forms the hernial tumor. Hallet's explanation is comprised in Marchand's, the abnormal adhesions being the primary factor leading to the persistence of the vitelline duct.

The embryonic period at which this malformation occurs is about the tenth week. According to Minot,[17] a temporary umbilical hernia, supposedly due to the strain produced by the yolk-sac, begins in human embryos of 10 mm. (twenty-nine to thirty days old), when that part of the intestine attached to the yolk stalk enters the umbilical cord. "The intestine which then leaves the body cavity proper increases in length, until about the tenth week, when it is gradually withdrawn." It is clear that any factor which prevents its withdrawal (such as amniotic adhesions between the ventral surface of the embryo and the chorion) would predispose to the development of hernia funiculi umbilicalis.

Since the work of Lindfors[2] in 1882, the radical operation for the cure of this condition has become general, and is indicated in every instance where prematurity or extensive malformations do not interfere with the child's viability. Cures have resulted from operations performed in the first hour after birth.

I am indebted to Dr. L. Emmett Holt for permission to report the case, which occurred in his service; and to Dr. Dorothy Reed for the drawing of the gross specimen.

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STOMATITIS IN IMPETIGO CONTAGIOSA.*

BY EDWARD F. CUSHING, M.D.,

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The occurrence of a form of stomatitis in impetigo contagiosa has been specially referred to in French pediatric and dermatological literature. Comby[1] called attention to this association seventeen years ago, and has several times returned to the topic, describing "*stomatite impétigineuse*" as a characteristic and not infrequent complication of acute facial impetigo.

Bergeron[2] in France, Bohn[3] in Germany, and J. F. Payne,[4] of St. Thomas' Hospital, in England, had previously reported instances of ulceration of the lips and mouth in children with impetigo contagiosa. Payne in his cases noted, also, the occasional inoculation of the disease on other orificial mucous membranes with a resulting purulent coryza, conjunctivitis, keratitis, or vulvovaginitis; and from the quite frequent combination of stomatitis and the whitlow-like lesions on the fingers used "hand and mouth disease" as a synonym of his own for the affection. He has again discussed the subject in his recent article[5] in Allbutt's System. To Bergeron and Comby, however, seem due the detailed clinical picture of this variety of stomatitis.

The lesions of impetiginous stomatitis bear a certain resemblance to those of herpetic or aphthous stomatitis. Their usual seat is on the inner surface of the lower lip, but they may occur on the inner surface of the cheeks, or of the upper lip, on the tip of the tongue, or on the gums, but always in the front of the mouth where the child's fingers might have reached. A pustular or crusted skin patch on the outer border of the lip may be directly connected with an ulceration on the mucous membrane within. The mouth lesions are single or few in number, not grouped like herpetic ulcerations, larger, as a rule, than the latter, irregular in outline, presenting themselves as slightly raised patches of a pearly-gray appearance when recent, and later of a grayish-white or yellowish hue. The patches are quite adherent, and their removal exposes a raw and bleeding surface. The surrounding mucous membrane is more or less reddened, and there may be increase of saliva, but no odor to the breath, and little or no local discomfort. The lymph nodes under the chin are slightly swollen and tender. The process remains superficial, and healing occurs, as a rule, within a fortnight. The diagnosis is simplified by the presence of a skin eruption of impetigo, though Comby has seen the lesions in the mouth precede those on the skin. He also, describes involvement of other mucous membranes with purulent rhinitis, conjunctivitis, and vulvovaginitis, and explains all the lesions, as well as the common paronychia, as the result of auto-inoculation from scratching or rubbing and the introduction of the finger into mouth, nose, or elsewhere.

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* Read before the Ohio State Pediatric Society, Cleveland, O., May 16, 1904.

Sevestre and Gaston,[6] Dupuy,[7] Leroux,[8] Poulain,[9] Levy[10] and others in France, have studied impetiginous stomatitis as well as the other secondary lesions of the nose, eyes and vulva, clinically and bacteriologically. All regard these complications, when looked for, as not infrequent. Bacteriological examination shows in all cases *staphylococcus aureus,* as in the skin pustules of impetigo. Leroux and Balzer and Griffon,[11] however, have isolated a streptococcus from early lesions on both the skin and mucous membranes, which by inoculations has produced characteristic lesions on the skin, furnishing anew the same organism, and they regard the staphylococcus as a secondary invader.

In recent German literature, also, there is a recognition of the occasional involvement of the mucous membranes in impetigo contagiosa. Lang,[12] of Vienna, in his text book, of 1902, describes these complications; and Mikulicz and Kümmel[13] in their exhaustive work on diseases of the mouth, refer to the subject. Jadassohn[14] in 1896 reported the successful inoculation of impetigo lesions on the skin from the mouth patches of the disease.

Excepting Payne's papers, however, I know of no discussion of the subject in English or American dermatological or pediatric text-books or journal literature. Forchheimer[15] in his admirable monograph on the diseases of the mouth in children, in 1892, alludes to the topic in the single sentence that "the fact that aphthæ may be found in the mouths of children with impetigo is of no possible value in establishing any connection between them." H. G. Anthony,[16] of Chicago, in 1898, reporting 50 cases of impetigo contagiosa notes of one what may serve as a very good description of impetiginous stomatitis, as follows:—"A child of three had the ordinary form on the chin, together with lesions on the mucous membranes of the mouth, which were not aphthous, but greatly resembled syphilitic mucous patches; they had appeared shortly after the chin lesions. There were no syphilitic lesions on other parts of the child's body and no history of syphilis in the child or its parents. Scrapings from these lesions contained staphylococci, but no oidium albicans. They healed promptly under treatment by peroxid of hydrogen."

It is obvious that the possible involvement of the mouth, the mucous membrane of the nose, the conjunctiva, or the vulva in impetigo contagiosa present problems of differential diagnosis of interest to the pediatric physician. In so common a disease, where a glance usually suffices for diagnosis, and in the uncleanly type of children, commonly affected and seen in dispensary clinics, it is easy to appreciate that a running nose, inflamed eyes or sore mouth may be overlooked, or not suspected to represent an integral part of the disease.

These complications of impetigo contagiosa were brought to the writer's attention by the following cases:—

CASE I.—*Impetiginous Stomatitis.* Charles P., six years old, was admitted to the Children's Ward of the Lakeside Hospital, under suspicion of typhoid fever. For a few days he had been listless, complained of headache and seemed feverish at night; the bowels had been constipated and he had vomited once. The boy was well-nourished and of good color, but was apathetic. Temperature 99.5° F., pulse 100. Examination was negative, except for lesions of impetigo on the face. In the middle of the forehead, on the upper lip at the orifice of the left nostril, and on the chin, were typical crusts of impetigo contagiosa, those on lip and chin brownish-red from blood admixture. There was slight mucopurulent discharge from the left nostril. The tongue was coated, the mouth and throat otherwise negative. The submaxillary and submental lymph nodes were slightly enlarged. There was no Widal reaction, and the leukocyte count was 11,000. The urine was normal. The child continued apathetic and drowsy for three or four days, the temperature ranging from 99° to 100° F. On the fifth day the temperature was normal, and the boy bright and hungry. The facial lesions were tending to heal. On the next day there was found on the inner surface of the lower lip near the right angle of the mouth a pearly-white, irregularly rounded lesion, ¼ inch in diameter, slightly raised above the mucous membrane, closely adherent, without red areola, but presenting a superficial resemblance to a lesion of herpetic stomatitis. The next day, a slightly larger patch of the same appearance was noted on the inner surface of the right cheek opposite the first molar. There was general redness of the mouth and some increase of saliva. The lymph nodes under the chin on the right side showed increased enlargement and tenderness. The thin, smooth, grayish-white patches, dull and opaque in look, did not resemble a diphtheritic membrane and were not pultaceous. The surface layer was closely adherent and left a raw, red surface on removal. There were no further lesions, and in the course of eight days, the patches gradually cleared. Meanwhile, the facial lesions had healed. Cultures from the under surface of one of the mouth lesions gave a pure culture of staphylococcus aureus.

CASE II.—*Impetiginous Rhinitis.* Mabel B., six years old, was brought to me because of a profuse purulent discharge from the left nostril of some days' duration. The character of the discharge suggested an inflammation of one of the sinuses, or the presence of a foreign body in the nostril. Examination, except for redness and swelling of the tissues, was negative. An older sister with whom the child slept, had been seen a few days before, with facial impetigo. No suspicion of the bearings of this fact on the purulent rhinitis was excited, until a typical pustule of impetigo appeared on the upper lip of the patient. Bacteriological examination of the nasal discharge showed staphylococcus aureus in pure culture. With simple treatment, the purulent secretion from the nostril subsided as the facial lesion healed.

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Comparative Examination of Maternal and Fetal Blood and Liquor Amnii and of Fetal Urine. — W. Zangemeister and Th. Mussl (*Münch. Med. Wochenschr.*, April 22, 1903), having made a study of this subject conclude that the number of red corpuscles is mostly greater in fetal than in maternal blood; that the white ones are somewhat less, and the red corpuscles of the infant blood are richer in hemoglobin. The maternal blood coagulates more rapidly and more completely, the blood-clot being firmer and the serum of a lighter color. The serum of the mother's blood contains more albumin, hence its specific gravity is greater; also the amount of nitrogen is greater. The chlorids in both kinds of blood are about the same and also the point of coagulation. The liquor amnii has a somewhat less specific gravity and less albumin and chlorids, but the amount of nitrogen is larger than that of either maternal or fetal serum and the point of coagulation is somewhat lower. The molecular concentration of the urine of the newborn is scarcely half as great as that of the blood, and the writers conclude from their extended investigations that the comparatively small molecular concentration of the liquor amnii is caused by the inflow of fetal urine, and that the fetus, at least during the last four months of pregnancy, discharges urine regularly into the liquor amnii.—*American Medicine.*

Clinical Lecture.

NOTES ON SOME SKIN AFFECTIONS IN CHILDREN.

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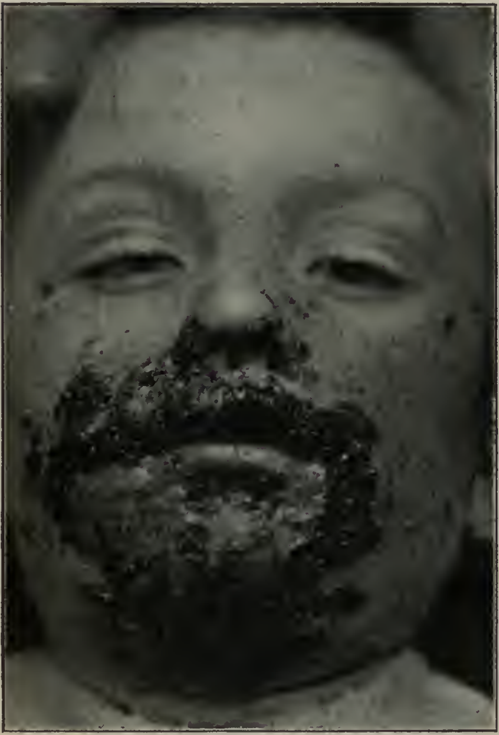
CASE I.—This is an example of a common skin affection of childhood which is doubtless often regarded as belonging to the comprehensive but not very definite class of the eczemas. This is not the case, however, as a brief consideration of its salient points will show.



CASE I.—IMPETIGO CONTAGIOSA.

The patient, a boy of seven, is brought here on account of an eruption, around the mouth and below the chin, that has been present for two or three weeks. The surface of the lips, of the cheeks around the angles of the mouth, of the submental region; and of the lower part of the nose, is more or less covered with thick and adherent crusts. Their color varies from a yellowish-green, where they are softest and evidently of most recent formation, to dark brown or blackish, where they are oldest and largely mixed with blood. The youngest crusts are soft and sticky; the older ones are hard and firm.

The crusts, however, do not entirely cover the area described; they occur in rounded figures, which in some places coalesce into irregular masses. In others, however, as at the apex of the chin and on the upper lip, there are areas of normal integument. This is proof positive that we are not dealing with a diffuse, catarrhal, eczematous inflammation of the skin, but with an affection that starts in separate and distinct foci, which only fuse together secondarily.

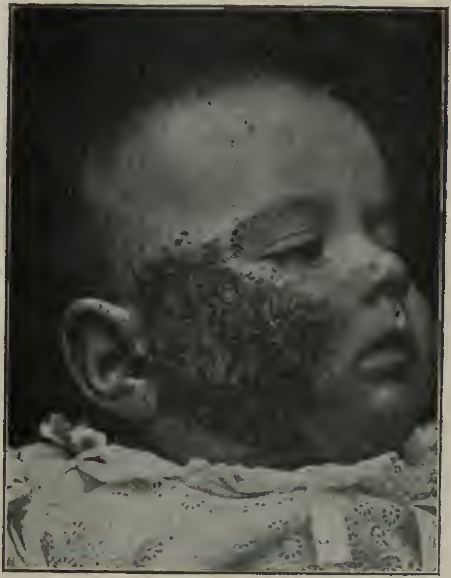
Crusts, of course, are but the remains of lesions; and if these only were present you would have to take my description of their origin on trust. Such, however, is not the case. On the right side of the lower lip and the cheek adjoining there are a number of flat vesico-pustules containing a yellow serum; a few are to be seen on the other side of the lower lip, and one or two are found on the cheek outside the crusted area. There are a few pustules also in which the crusting process has just begun; these are commencing to flatten down, dry up, and get darker in color; evidently, in a day or two they will be transformed into crusts like those that make up the bulk of the eruption.

The malady begins, therefore, with the appearance of flat pustules, singly or in groups, which in the course of a few days dry up to form the characteristic crusts shown by the patient. Removal of the scabs, which is not difficult, shows a moist, reddened surface of skin underneath, but no loss of tissue or ulceration. Left to themselves, they dessicate and fall spontaneously; the reddened areas left behind gradually fade away and leave no trace. The continued appearance of new lesions may, however, prolong the malady for a considerable time.

This is a disease picture entirely different from that of an ordinary eczema, which is never entirely pustular and circumscribed, has no sharp boundaries to its lesions, and lasts indefinitely. The original lesion is an impetigo; and as new pustules originate by direct transfer of infectious material from the first one, and as it is not uncommon to find several children of a family, or many children in a school affected, it is evidently contagious. We therefore classify it as impetigo contagiosa.

The contagious agent is undoubtedly one of the pus cocci, and an organism exactly similar to the staphylococcus pyogenes has been obtained from the serum of the original vesicles.

The diagnosis having been made, treatment is very simple. Crusts should be removed by soaking with 2 per cent. salicylic acid-oil, wet boric acid dressings, etc. When this has been accomplished the remedy to employ is a 2 to 3 per cent. ointment of ammoniated mercury. This may be regarded as almost a specific for the affection; it is rarely indeed that the advent of eczematous symptoms necessitates the employment of Lassar's paste or similar salves. Local spread of the affection is prevented by cleanliness and the use of antiseptic washes. It is well to employ the same means for prophylactic purposes on the exposed skins of healthy children when one or more in a family or an institution are affected.



CASE II.—ECZEMA FACIALIS.

CASE II.—This is a true eczema, and the points that differentiate it from the preceding case are very well marked. The entire surfaces of both cheeks are vividly reddened and crusted; and there is no normal skin to be seen anywhere over the area that is affected. The crusts are dark brown, not yellowish, even when fresh; and the flat, superficial pustular lesions of impetigo are nowhere to be seen. The redness fades gradually into the normal skin, and at the spreading margins of the inflamed areas are seen examples of the original lesions; these are minute acuminate inflammatory papules. In their progress toward the completed oozing eczematous lesions they pass through a period of vesiculation and pustulation; but it is so very brief that we rarely see it. There is no time limit to the affection; it may persist indefinitely. And there is absolutely no element of contagiousness, in the ordinary sense, about it; it is a pure matter of accident when more than one member of a family is affected.

The etiology of eczema is a subject much too extensive for present consideration. We had hoped two years ago, when certain investigators had found that they could produce a catarrhal inflammation of the skin similar to an eczema by inunction of the toxins of the pus cocci, that the cause of certain varieties of the affection, at least, had been found. But their conclusions have not as yet been confirmed; and it is very certain that other factors besides local infection are active in many cases of the disease.

This is certainly the case with the ordinary infantile facial eczema which we are now considering. Experience has demonstrated beyond the possibility of doubt that gastrointestinal disturbance is an important, and perhaps the chief, factor in its causation. Many of these children look exceptionally rosy and well nourished; yet careful examination reveals the fact in most cases that they are affected with dyspepsia, or constipation, or some form of gastrointestinal disturbance. The feeding is almost always improper; the kind of food is wrong, or it is improperly administered. Mixed feeding, partly artificial and partly natural, and the common habit of nursing the baby whenever it cries, or allowing it to lie at the breast all night, is a frequent fault. I attach especial importance to this matter in these cases, and always give exact directions not only as to the kind of food to be employed, but also as to the times of feedings, the intervals between meals, and the rate at which the nutriment should be ingested.

The treatment of these cases is easy when the alimentary conditions have been regulated. A simple catarrhal inflammation of the skin requires protection from irritation and the use of a bland and soothing dressing. The crusts must be removed with warm olive oil and absorbent cotton, and measures must be taken to prevent the action upon the inflamed surface of the three chief sources of irritation, air, water, and the finger-nails. A properly fitting linen mask, with holes in it for the nose, eyes, and mouth, must be kept tied on over the dressing. Gloves must be worn, especially at night; and if these do not suffice to keep the child's hands from its face, they must be tied, or kept inside the gown, or inside a sheet wrapped round the body. Cleansing is to be done only with the olive oil.

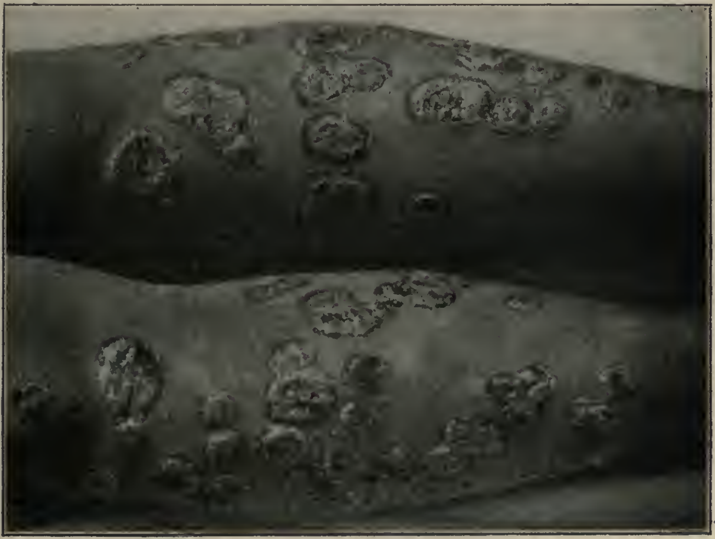
For the treatment of the eczema itself I usually employ a 1 to 2 per cent. ichthyol-zinc ointment, most readily made by adding that proportion of ichthyol to the officinal zinc oxid ointment. In the later dry stage a little salicylic acid is needed, and 1 or 2 per cent. of it may be added to the above formula. The ointment should be spread evenly as thick as the back of a table knife on strips of muslin or sheet lint cut to fit the inflamed areas, should be applied under the mask, and should be renewed at least twice or three times daily. In the very last stages, and to prevent relapse when cured, a dusting powder containing a little menthol, salicylic acid, and zinc oxid, should be employed.

Case III.—An extensive psoriasis is a sad infliction at any age, and especially so in childhood. For it cannot be radically cured by any means that we know of; and the prospects before such a child are that it will be subject to continuous attacks of the affection, very possibly of increasing severity and at shorter intervals, during the rest of its life. I do not mean to say by this that psoriasis never ends. There are possibly and even probably cases in which a single or a few outbreaks only occur. If cases invariably relapsed, our offices would be filled with them all the time. But recurrence is the rule in the cases that we can follow up; and whilst we can promise the patient to clear the eruption from the body, our efforts are but temporary and palliative at the best.

In this boy's case the whole body, including the face and scalp, is more or less affected; but the legs are most extensively involved. Here the large nummular placques, looking for all the world as if handfuls of fresh mortar had been thrown against the skin, are most closely grouped.

The real cause of psoriasis is entirely unknown to us. Heredity, however, undoubtedly plays a part in its causation; for it is very common to find that one of the patient's parents or grandparents, or an aunt or uncle, or a brother or sister have suffered from the disease. Heredity plays a part, I think, in fully one-third of the cases.

If our treatment can only be palliative, it must none the less be vigorous; we must clean the patient's body as soon as possible. I believe very firmly in a combined internal and external treatment; and I therefore employ arsenic in almost every case. In private adult cases I use a 1 per cent. sodium arseniate or a 2 per cent. sodium cacodylate solution by injection daily or every other day, regulating the dosage only by its constitutional or therapeutic effect. For children, however, and for public work, Fowler's solution or the Asiatic pill is preferable. In this case we will start with six drops of Fowler's with a little tincture of iron thrice daily, and increase the arsenic rapidly until we begin to get its effects.



CASE III.—PSORIASIS NUMMULATA.

The local treatment must consist in the first place in the thorough removal of the scales by means of a hot-water-green-soap bath and a scrubbing brush; this must be repeated from time to time, as the necessities of the case demand. Of late I have been using tar very much more than chrysarobin, which was the favorite local application some time ago. It is less liable to excite dermatitis and conjunctivitis, and does not have quite so dreadful an effect on the patient's clothes and general comfort. Rectified birch tar (oleum rusci), 10 per cent. in olive oil or vaselin will do very well; the proportion of the tar to be increased as the susceptibility of the patient's skin is ascertained. During this last winter I have been using a tar-formalin preparation called empyroform a good deal in these cases, and am satisfied with its effects. I should prescribe for this boy a 5 per cent. empyroform-vaselin ointment, to be thoroughly rubbed in with a bristle brush on all the spots twice daily. The time required to clear his body should not be more than three weeks.

Treatment of the Throat in Influenza of Children.—In the *Journal of the American Medical Association* of July 4, 1903, Williams points out that in septic cases there is membranous inflammation of the throat and nasopharynx, with increased action of the muciparous glands. These mucous membranes present a large absorbent surface richly supplied with lymphatics, and there are enlargements of the glands, continued fever, and a general infection. In such cases treatment of the throat and the nasopharynx is extremely important. The author believes there is nothing so efficacious as irrigation of these parts with a warm salt solution. This is to be accomplished by means of the fountain syringe. It is usually better to wrap the child in a sheet so that it will be completely under the control of the attendant. Personal supervision is advised, at least for the first time. The mouth and throat are first to be irrigated; when irrigating through the nose the mouth must be kept open. The author is of the opinion that fluid is not driven in the Eustachian tube unless the patient attempts to swallow during the treatment. If the jaws are kept separate deglutition cannot take place. The amount of purulent material that is washed away in some of these cases in a single treatment is remarkable. These treatments are to be repeated according to the exigencies of the case; two or three in twenty-four hours, for two or three days, are usually sufficient. The temperature has been observed to drop two or three degrees after this treatment. In cases where the discharge from the throat and nose is fetid, the use of permanganate of potassium, 5 grains to the pint, is of benefit.

In the septic cases stimulants are always indicated, and should be given frequently and at regular intervals. The condition of the heart should be our guide in the use of strychnin or other cardiac stimulants.—*Therapeutic Gazette.*

Clinical Memoranda.

A CASE OF PNEUMONIA WITH UNUSUAL TEMPERATURE RECORD.

BY FRANK SPOONER CHURCHILL, M.D.,

Instructor in Pediatrics, Rush Medical School (University of Chicago), Chicago.

The following case seems worthy of record. I am indebted to my colleague, Dr. I. A. Abt, for permission to publish it.

Abe N., six years old, entered the contagious ward at Cook County Hospital, October 18, 1903. The history is as follows:—

FAMILY HISTORY.—Negative.

PREVIOUS HISTORY.—Measles two years ago; pertussis one year ago; general health otherwise good except that he "catches cold" easily.

PRESENT ILLNESS.—Four days before entrance the patient was attacked with "a cold" having some cough and considerable coryza. Yesterday he complained of sore throat, and had a chill followed by high fever, nausea and vomiting.

PHYSICAL EXAMINATION.—Pale and cold, development and nutrition fair, breathing with some difficulty.

Throat.—Tonsils enlarged and reddened, but without membranes or spots. Pharynx not markedly injected.

Chest.—Impaired resonance beneath right scapula, with crackling râles at end of inspiration and modified tubular breathing.

Heart.—Soft systolic murmur at the apex, second pulmonic sound loud.

Urine.—Normal color, 1,015, a trace of albumin, no casts.

Cultures from the throat failed to show any Klebs-Löffler bacilli. The patient was given 2,000 units of antitoxin and transferred to the general medical ward.

The subsequent daily notes are as follows:—

October 19th.—Sweating freely. Chest as yesterday, but no râles.

October 20th.—Some tight cough, nausea, chilliness from 9

A.M. until noon, followed by sweating throughout the afternoon. Chest as before.

October 21st.—Chilly and cold in the morning with temperature 105°F., and again in the afternoon with a temperature of 106.4°F.

Lungs.—Upper third of right chest anteriorly, shows increased vocal fremitus and voice sounds, faintly bronchial respiration, no râles. Leukocytes 25,000.

October 22nd.—2 A.M. sweating; 6 to 8 P.M. complains of being cold, of headache, and of pain in chest. 5 P.M. sweating.

October 23rd.—Chest.—Slight dullness at right apex, and just below right clavicle with increased vocal fremitus, slight bronchophony and faintly bronchial respiration; voice sounds increased upper third of right back also. No râles anywhere.

Blood.—Leukocytes, 10,000. Small mononuclear, 17.3 per cent.; large mononuclear, 11.7 per cent.; polynuclear, 67 per cent.; eosinophiles, 4 per cent. No change in the erythrocytes, no plasmodium. Widal negative.

October 24th.—General urticarial eruption. (Antitoxin?)

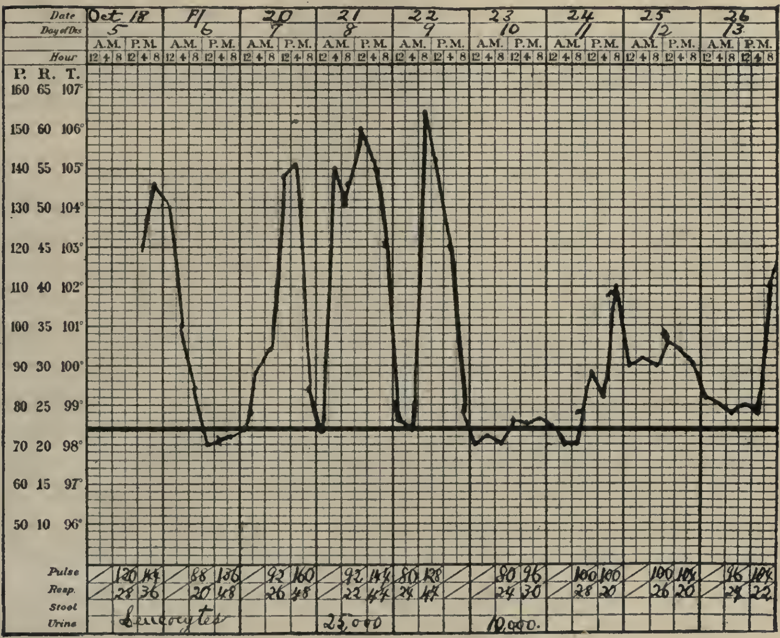
October 28th.—Leukocytes, 23,000.

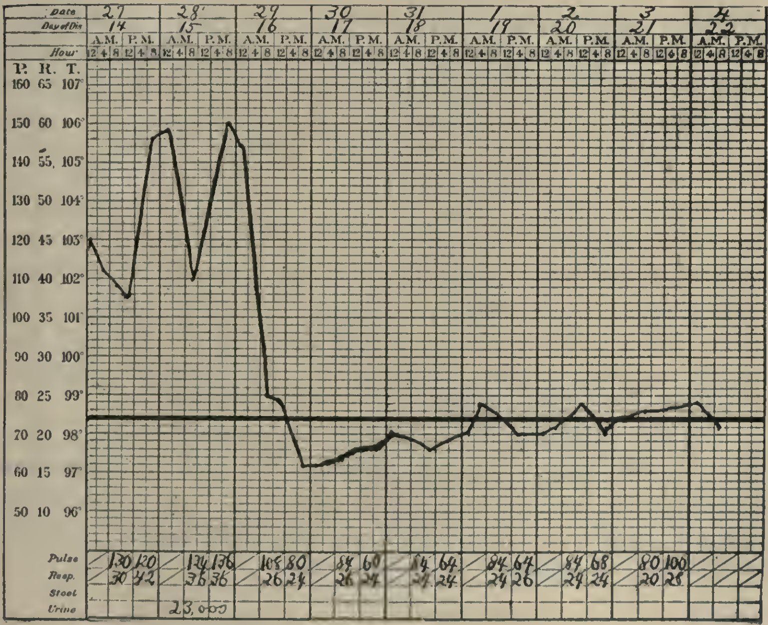
October 29th.—Blood culture shows staphylococci in apparently pure culture. Urine.—Pale, acid, 1,010; no albumin; no sugar; no diazo. A few hyaline casts, a few pus cells. General condition better.

The patient continued to improve from this time on, the signs in the chest gradually cleared up, and there was nothing further of special interest in his history.

This case presents several points of interest, and the exact diagnosis at times it was difficult to determine. The onset threw no particular light on the case, and the diagnosis of diphtheria made outside the hospital was not confirmed by subsequent observations. The physical signs on entrance to the ward, though not well marked, were sufficient to justify a diagnosis of lobar pneumonia, probably of purely pneumococcic origin, two throat cultures failing to show any influenzal bacilli.

The most interesting feature of the case was the temperature chart (see chart); this was characterized by marked remissions ranging from normal to 106° within periods of twenty-four hours. This erratic course, together with the sweating and chilly sensations, suggested the possibility of some pus focus, *e.g.*, an empyema or, less likely, a pulmonary abscess. The ill-defined signs





TEMPERATURE CHART—CASE OF PNEUMONIA.

in the chest, though not unusual in the lobar pneumonia of children, made one the more suspicious of such a complication. The absence of râles, except at the onset, has been noted in pneumonia as well as in empyema, hence, too much diagnostic importance can not be attached to the failure of this sign.

It was naturally thought, in the great drop in the temperature on the sixth day, that crisis had taken place, but the subsequent rise to 105° within twenty-four hours dispelled this hope, and first excited suspicions of a reinfection or beginning empyema. The gradual development of signs in the upper right front on the eighth day, pointed to an extension of the process to the right upper lobe. But what was the significance of these tremendous oscillations of temperature? Were we dealing with an empyema which the chest signs, often puzzling and difficult to interpret in children, as well as the temperature, seemed to indicate or with a pneumonia, atypical and irregular in its behavior even for a child? While the leukocyte count of 25,000, rather low for an empyema, and the evidence on the whole pointed to a pneumonia, one could not dismiss absolutely the possibility of an empyema. The tenth day brought the fourth great drop in the temperature, but this time was accompanied by a normal leukocyte count, in contrast to the leukocytosis preceding the third drop on the eighth day. There seemed, therefore, some ground for the belief that crisis had actually taken place, and so it proved to be, the temperature remaining at or below normal for about thirty hours; then without apparent rhyme or reason, it began to rise and ran the course indicated on the chart, still with oscillations, but less marked than during the first ten days. There was a corresponding rise in leukocytes, indicating a general reinfection. Throughout this second period of temperature the signs in the chest remained practically stationary, and again aroused suspicion of fluid. None developed, however, and finally on the sixteenth day the patient had a second genuine crisis. Afterward the temperature never rose above normal.

The case illustrates how extremely atypical and irregular may be the course of pneumonia in children. Its prolonged duration was doubtless due to the creeping nature of the pathological process, though the exact trail I was unable to follow. It must have been "underground."

394 East Chicago Avenue.

ERYTHEMA, PURPURA, MULTIPLE ARTHRITIS, ABDOMINAL COLIC, HEMORRHAGE FROM THE BOWELS, HEMORRHAGIC NEPHRITIS; RECOVERY.

BY D. J. MILTON MILLER, M.D.,
Philadelphia.

Maggie G., ten years old, schoolgirl, was first seen January 5, 1904. No family history of rheumatism or chorea. Mother and one sister said to have bled profusely after slight injuries. The patient has had measles, chickenpox and whooping-cough; with the latter she had hemorrhages from the mouth, nose and ears. She has had repeated attacks of tonsillitis; one two years ago, followed by pain in the hands and feet. The child has never had chorea, nor has it been observed that she bleeds more readily or profusely than other children.

The present illness began twelve days ago with chilly sensations, headache and sore throat; the latter was part of a house epidemic, the patient being the last to succumb. Two days later she had nausea and vomiting, with inability to walk, because of swollen and tender feet and ankles. Soon both wrists were involved, and the fingers "so stiff that she could not hold a spoon." On the fifth day spots appeared about the feet and ankles, and continued to come out over the upper and lower limbs for six days.

Present Condition.—The patient is a well-nourished girl. The face is swollen and heavy, and there is an eruption of apparent herpes on the upper lip. She is a mouth-breather, and examination reveals enlarged and much-scarred tonsils, and a few ecchymotic spots on the hard palate and uvula. On the elbows and extensor surfaces of both wrists and forearms are numerous brownish and reddish, slightly elevated, papules, varying from a pinhead to a pea in size. The eruption on the back of the hands is purpuric in character and accompanied with considerable swelling. There is a large ecchymosis on the right buttock, and scattered over both thighs can be seen a few large brownish papules. In the popliteal space and over the legs are numerous distinct spots of purpura. On the dorsum of the feet, especially on the outer side of the left foot, the rash is vesicular, in places forming blebs as large as a dime. These vesicles and blebs surmount an elevated papule of purplish color, and contain a sero-bloody fluid. A striking feature of the eruption is its symmetry.

Examination of the thorax and abdomen is negative, beyond an accentuated pulmonary second sound, and a systolic basic and apex murmur, but loudest at the former point; the spleen, also, is enlarged, but is not palpable. The urine is dark in color; the specific gravity is 1,020; acid; abundant albumin; many narrow and medium hyaline and granular casts; a few blood casts; and numerous red blood cells and leukocytes. The left wrist and both ankles are slightly swollen and painful; no other joints are effected, but the dorsum of the hands are a little puffy and the fingers so stiff that they cannot be closed with comfort.

Two days after admission to hospital the patient had severe colicky pains, followed by several mucous and bloody stools. On January 10th a fresh crop of purpuric spots appeared on the legs and knees. There was severe vomiting on this day and marked prostration; the face was quite swollen, but the swelling was more general than, and did not resemble, the ordinary nephritic facies. Two days later (January 12th), it was noted that the eruption was fading and that the abdominal pains were severe, and accompanied with blood-streaked stools. During the rest of January there were recurring outbreaks of the eruption, partly purpuric and partly erythematous and papular, with fleeting joint pains and swellings, and attacks of nausea (rarely vomiting), abdominal pains and abundantly blood-streaked and mucous stools, but with no actual hemorrhage from the bowel.

After the first of February these symptoms gradually subsided; the nephritis, however, persisted, the urine showing albumin, casts and blood cells until well on in February, and it was not until early March that the nephritis had entirely disappeared. During the attack several blood counts were made, the red cells averaging 4,000,000, the hemoglobin 60 to 70 per cent., the leukocytes from 7,000 to 15,000; the higher counts being coincident with the periods of most intense arthritic pain and swelling. Blood cultures were taken from the median basilic vein, but remained sterile. The coagulation time of the blood was not tested.

On admission the temperature was 101°, later it fluctuated between 98° or 99° and 100° plus.

The treatment consisted in the administration of the tinctures of iron and digitalis, orange juice and, for a brief period, aspirin. Until the albumin had disappeared from the urine, a period of ten weeks, rest in bed and milk diet was maintained.

Not knowing how to name this remarkable case, I have purposely refrained from giving it a title. It belongs to that interesting group of cases which Osler has described at various times under the caption, "The Visceral Manifestations of the Erythema Group of Skin Diseases." It resembles in many, although not in all, particulars the socalled Henoch's purpura. Without entering into a discussion of the etiology of this remarkable group of affections, it may be well to recall that some, at least, are of infectious origin. Such was probably the nature of this case; the child for years had been subject to tonsillitis, finally, during a house epidemic of that disease, she is attacked herself, and immediately there follows the remarkable group of symptoms above related. The importance of the tonsils as a port of entry for infective processes, as shown by the close relation of tonsillitis with acute rheumatism, and, occasionally, with other infections, is universally recognized, and the causative factor in this case may well have gained entry through this avenue. The frequent association of many of the symptoms exhibited by the patient with the rheumatic poison may lead some to conclude that the condition was, after all, but a manifestation of the rheumatic state. Opposed to this view, was the slight degree of arthritis present, and the failure of aspirin to control the symptoms; besides, the arthritis of socalled peliosis rheumatica, under which head this case might easily be classed, has probably nothing whatever to do with the rheumatic poison, whatever that may be. Very interesting is the intense nephritis which formed so prominent a feature of the case; such attacks may well be the cause of some unexplained attacks of nephritis in childhood and in mature life, particularly the renal insufficiency that occurs during pregnancy.

The Etiology of Affections of the Left Heart in Childhood.—L. Concetti (*La Riforma Medica,* March 11, 1903) concludes from his researches that acute polyarticular rheumatism is the most frequent cause of acquired cardiopathies. In children endocarditis from rheumatism or other infections is more rare than in adults. The majority of cardiopathies in children which are supposed to be acquired, are really the result of arrested or faulty embryonal development, exhibited before birth or in the first years of extrauterine life.—*American Journal of Obstetrics.*

A CASE OF ABDOMINOTHORACOPAGUS.*

BY HERMAN B. SHEFFIELD, M.D.,

New York.

R. B., white, twenty-seven years old, was taken with labor pains on the 5th of March, 1904, at 7 A.M. I was sent for at 6 P.M., and found the membranes intact, the os fully dilated, R. O. P. position, and the labor pains very strong. The second examination two hours later revealed exactly the same condition as on the first examination. I ruptured the membranes and an enormous quantity of liquor amnii escaped, but without any distinct descent of the fetal head. Forceps were resorted to at 11 P.M., with the result that the presenting parts were delivered as far as the shoulders, and repeated attempts to deliver the remainder of the body utterly failed. Realizing the extraordinary condition of the case I decided to discontinue the anesthesia and to give Nature another opportunity. About one hour later the feet of the second baby were found to have descended near the nates of the first one. I then flexed the delivered parts of the first baby against the pubic arch and abdomen of the mother and by simultaneously exerting powerful traction, succeeded in delivering the first baby. In the meantime the second child assumed a more or less transverse position. I passed two fingers into the uterus, grasped the feet of the second baby and managed to deliver it without involving the slightest injury to the mother. The placenta (one) which was moderately large in size was delivered by Credé's method. The babies were fully developed and weighed 11½ pounds. There was but one umbilical cord. Part of the intestines prolapsed through the umbilical ring. The fetal heart sounds were distinctly audible until about a half an hour before complete delivery.

The accompanying illustrations give a complete picture of the mode of union, rendering a minute description of the monstrosity superfluous. Mention will be made only of the fact that a thin layer of cartilage—representing the sternum—intervened between the opposing ribs. (See Figs. I. and II.)

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* Presented upon request to the American Pediatric Society, at the meeting held at Detroit, June 1, 1904, by Dr. S. S. Adams, of Washington, D.C.

The history of the mother lacks any important data to elucidate the etiology. The mother gave birth to a normal child two years ago. There were several twin births in the family and one of her sisters was delivered of living triplets three years ago. When the mother was four months pregnant she attempted to induce abortion by means of drugs and by lifting and dragging heavy pieces

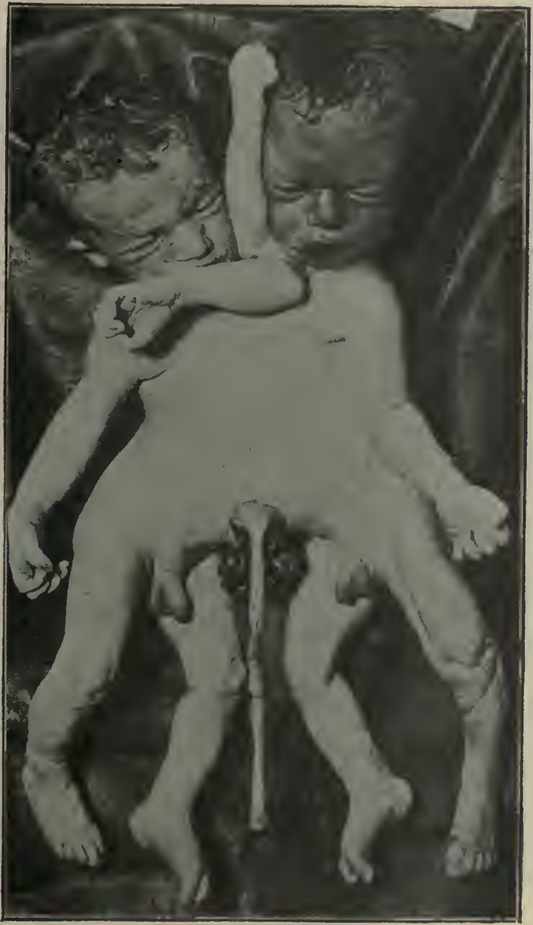

FIG. I.—PHOTOGRAPH OF CASE OF ABDOMINOTHORACOPAGUS.

of furniture. Her failure in the attempt was followed by a very exciting attack of hysteria of thirty-six hours' duration. From the fifth month on pregnancy proceeded without any unusual manifestations. The mother often felt active motion on both sides of the abdomen while the central portion always seemed to remain stationary; she felt as though "two bodies were trying to tear themselves apart."

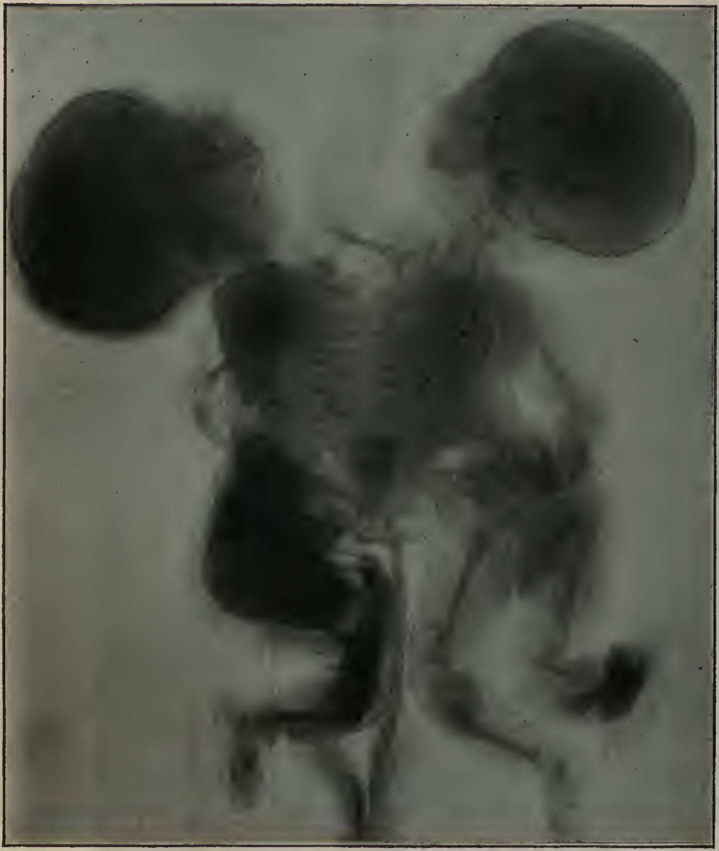

FIG. II.—RADIOGRAPH OF CASE OF ABDOMINOTHORACOPAGUS.

She made a perfect and rapid recovery.

I am indebted to Dr. H. Grad for the splendid radiograph and to Dr. G. Brown for his skilful assistance.

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PROTOZOON-LIKE BODIES FOUND IN SCARLET FEVER.

Dr. Mallory stated in a communication before the Boston Society of Medical Sciences, December 15, 1903, that he had observed in the skin of four patients dying from scarlet fever protozoon-like bodies. His report, with illustrations, is published in the Journal of Medical Research of January, 1904. His interest had been aroused by the work of Dr. Councilman and his assistants on variola, and their observations in regard to the protozoon-like bodies observed in this disease. The bodies observed in scarlet fever are found in the protoplasm of the epithelial cells of the stratum granulosum, between the cells and in the lymph spaces of the corium. In the cells they lie in distinct vacuoles, generally indenting the nucleus. The reticulated bodies are found within and without the cell protoplasm, and vary in size from 3 or 4 microns to 10 or 12 in diameter. In the lymph vessels, between the cells and in them there are rosette shaped bodies present; they are usually spherical in shape, having a central point and surrounded by a ring of granules. Sometimes this peripheral ring is connected by delicate striations with the central body; in other cases they are surrounded by homogeneous substance. From this rosette appearance he has termed them cyclaster scarlatinalis. He thinks that the cycle is somewhat as follows:—The small bodies are brought to the skin by way of the lymphatics, they enter the epithelial cells where they enlarge and become reticular in structure, they then form the rosettes and the rosette now breaks up into a number of small definite bodies, the cell dies and these bodies are extruded and often the cell breaks down and they are then found in the lymph spaces. The small solid bodies again enlarge and repeat the cycle within the cell.

He thinks that these bodies are protozoon in nature, and believes they have an etiological relation to scarlet fever, but he does not claim that he has absolutely proved them to be protozoa or their causative relation to the disease.

In the Research Laboratory of the Department of Health, of the City of New York, we have examined the skin from five patients dead of scarlet fever; in all 5 of these cases we have found the reticular intracellular bodies. Dr. Mallory has seen our material, which was prepared by Dr. Field, and considers the bodies which we have observed to be identical with his. In one case we found some structures which we think may be of the rosette forms undergoing degeneration owing to postmortem changes. We have examined, also, the skin from four patients during life; in none of these cases have we observed these bodies. The skin from these patients was not taken at the same period of the disease as that from the dead patients. Dr. Mallory has also failed as yet to find the bodies in skin taken from living cases. We have examined smears made from a superficial scarification where there has been considerable exudation of lymph from the superficial lymph vessels and have been unable to find any suspicious bodies. We have been unable, so far, to examine any other tissues besides the skin as we have not had permission for autopsies in the cases of scarlet fever selected. Dr. Mallory observed these bodies in one of his cases in the lymph vessels of the tongue, which is a most interesting point. These bodies do not resemble very closely those found in variola. They resemble more the reticular forms of the malaria parasite, but in size they are ⅓ larger. The observation of these bodies in scarlet fever is most interesting and suggestive, as it is the first discovery of any bodies appearing like a microorganism which are peculiar to scarlet fever. A long time will have to elapse before enough work will have been done to give us sufficient basis to determine their nature and relation, since it will be a matter of great difficulty to prove on purely morphological grounds whether or no these are parasites and if so their etiological relation to this disease.

At the present time this discovery does not suggest anything new in the line of therapeutics, even if the interpretation of Mallory is correct. Our knowledge of the protozoon diseases is still very limited. There is one disease caused by a protozoon for which we have a curative agent, quinin in malaria. Ehrlich thinks that his trypanrot, a new dye, will have a therapeutic value in trypanosoma diseases, and it is thought by workers in the United States Government laboratories of the Philippines that they will be able to produce an immunizing and antitoxic serum for surra, a disease caused by a trypanosoma in horses.

If scarlet fever be proved, therefore, to be a protozoon, rather than a bacterial infection, we would seem to have more hope of finding some chemical substance which would have curative value.

If these bodies are the exciting factor in scarlet fever, there will be no doubt but that the skin as well as the mucous membrane is a carrier of contagion and thus an old controversy will be settled.

There will be still the need of an efficient antistreptococcic serum, even if it is established that this protozoon and not some form of a streptococcus is the cause of scarlet fever. The frequency of streptococcus infection in scarlet fever is an established fact and it is probable that many cases die from this infection rather than from the effects of the products of the scarlet fever organism. Up to the present time, however, the use of the serum has not given very satisfactory results. In our own experience we have seen neither good nor bad effects follow its use. The children who were not given the antistreptococcic serum did as well as those receiving it. The fact that certain rashes occurring in septicemia as well as those following injections of antitoxic sera resemble scarlet fever so closely that they can scarcely be differentiated from it, leads us to think that at the present time we include under the name scarlet fever more than one disease. If this supposition turns out to be true, we might find a streptococcus to be the exciting factor in more or less atypical cases while a protozoon might be the cause of true scarlet fever.

W. H. PARK.

Ocular Manifestations of Hereditary Syphilis. — E. Sendral (*Recueil d'Ophthalmologie,* May, 1903) observes that hereditary syphilis frequently causes interstitial keratitis, which may disappear without leaving a trace. A return of the trouble is apt to occur, especially if a first attack have left any corneal opacity; it is always grave because it involves the deeper membranes and endangers vision. Treatment must be energetic and prolonged. Hereditary syphilis is frequently developed in subjects predisposed to lymphatic and scrofulous troubles, a fact which explains the remarkable tenacity of the affection observed in many cases. The treatment of interstitial keratitis should, as a rule, be that of syphilis. Mercury alone will give better results than mixed treatment. The iodid of potassium, which frequently has such marked action on syphilitic manifestations, is less successful in the case of ocular lesions,—*Medical Record.*

Bibliography.

Lea's Series of Medical Epitomes. Edited by **V. C. Pedersen, M.D.** **Pediatrics.** A Manual for Students and Practitioners. By **Henry Enos Tuley, A.B., M.D.** 12mo, 266 pp., with 33 engravings. Philadelphia and New York: Lea Brothers & Co. 1904. Price, $1.00, net.

This neat and handy volume is a very satisfactory epitome of the recognized American authorities on pediatrics. In twenty-three chapters the whole range from infantile anatomy and physiology to the contagious exanthemata has been covered. Especially good chapters are those on Infant Feeding, on Diseases of the Digestive Tract and Diseases of the Lungs.

Under development the average gain in height after the second year should have been stated as nearer 6 cm. than 10 cm. per year; nothing is said about the time at which the infant holds up the head, plays with toys, sits alone and walks, all of which are important, as showing neuromuscular coordination. Adrenal preparations should be mentioned in the treatment of melena neonatorum, and the presence of acetone in the urine of cyclic vomiting as an aid in diagnosis. Tuberculous peritonitis is regarded as best treated by incision and drainage, whereas the trend of opinion nowadays is in favor of medical treatment of these cases. The student will probably be puzzled by the separate descriptions of pseudoleukemia and Hodgkin's Disease, and also by the classification of pernicious anemia with von Jaksch's anemia infantum pseudoleukemica, which by a typographical error is made pseudoleukemia. Moreover, even in such a manual one would expect to find a short paragraph on the treatment of croup and of convulsions.

Notwithstanding these minor criticisms, Dr. Tuley's epitome is a valuable addition to the series of students' manuals, and is made the more convenient for quizzing by having a series of questions at the end of each chapter.

Kompendium der Kinderkrankheiten, ein praktisches Nachschlagebuch für Studierende und Aerzte von **Prof. Dr. Ferdinand Frühwald,** Abteilungsvorstand an der Wiener Poliklinik, mit 165 in der text gedruckten Abbildungen. Liepzig und Wein, Franz Deuticke, 1904. Pp. 415. Price, $3.00.

Arranged alphabetically this volume is a handy reference book for students and physicians. The descriptions are clear and concise. Pathology, bacteriology and treatment are given with each disease, so that the book is much more than an ordinary epitome. From his wealth of clinical material the author has collected a great number of excellent illustrations which add greatly to the value of the work.

Des Kindes Ernährung, Ernährungsstörungen und Ernährungstherapie, ein handbuch für Aerzte, von **Prof. Ad Czerny** und **Dr. A. Keller** der universitäts-kinderklinik zu Breslau. V. Abt. Leipzig und Wien, Franz Deuticke, 1904. Price, $1.25.

This fifth part of the authors' work on the nutrition of the child takes up the physiology of the breast-fed and the artificially-fed infant, together with the study of the various Continental substitutes for breast milk (diluted milk with the addition of carbohydrate or albumen, Gärtner's and Backhaus' preparations, etc.) Nothing is said of percentage modification of milk, and there are no references to the work of American investigators. Next follow chapters on the comparative growth of infants, breast-fed and artificially-fed, during the first year; on the muscular development of the healthy infant; on the urine, the required number of calories in the food of infants and children and a final chapter on the growth in height and weight from infancy to the completion of adolescence.

This section has numerous tables and charts, as well as photographic illustrations, that make it a valuable reference book for all physicians who are doing serious work in infant feeding.

Soxhlet's Nutrient Sugar for Sick Infants.—O. Rommel (*Münch. Med. Wochenschr.,* February 10, 1903) recommends Soxhlet's sugar in all acute cases as first food after absolute water diet in chronic disturbances of nutrition following a diet rich in fat and milk. It can be used in earliest childhood. He describes the method of preparation, and appends extracts from thirty-six histories, 75 per cent. of which showed improvement or cure.—*American Medicine.*

Society Reports.

THE NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, April 7, 1904, under the auspices of the Section on Pediatrics.

DR. ANDREW H. SMITH, M.D., PRESIDENT OF THE ACADEMY, IN THE CHAIR.

MODES OF INFECTION IN TUBERCULOSIS.

DR. PHILIP S. SABINE read this paper. Reviewing the literature of the subject, he said that many cases had been reported in which tuberculosis was present in children prior to birth, but there was an absence of clinical evidence to prove the infection to be from the father; while maternal infection was an established fact. Baumgarten claimed that the majority of cases of tuberculosis are due to heredity. There was no doubt in the minds of investigators that congenital tuberculosis was very common. Dr. Sabine then considered postnatal types, giving a statistical review of evidences of this disease as it occurred in the urogenital tract, through coitus, through inoculation, through the air passages, the nasopharynx, the tonsils, etc. He believed that the tonsils were the chief portal of entry.

INFANTILE TUBERCULOSIS; ITS PORT OF ENTRY, TOPOGRAPHY AND CLINICAL MANIFESTATIONS.

DR. ROWLAND G. FREEMAN said that tuberculosis in young children was fairly common; in 1,448 successive autopsies at the Foundling and Nursery and Child's Hospitals, 158, or nearly 11 per cent., showed tuberculous disease. This was much lower than given by other writers.

Portal of Entry.—The point of infection in most cases is a subject on which the widest difference of opinion exists among the highest authorities. The assumption that the tubercle bacilli most often gained access to the human body by the respiratory tract seemed well founded. It had been demonstrated by experiment that many bacteria gained access to the air passages by inhalation of the dust-laden air, and that expired air contained no bacteria, the bacteria having found lodgment on the mucous membrane. The ciliated epithelial cells and phagocytes were able to remove and destroy most of these bacteria; but an inflammation or abrasion might offer further opportunity for the invasion of the human organism by some germs. It was still a question to what extent the tonsil was ordinarily a portal of entry of the tubercle bacilli, but the lymph nodes of the neck might be safely considered as frequently the first lesion noted after the third year, and tuberculosis of these lymph nodes often existed where there was no evidence of other tuberculous lesion. Tuberculous bronchial lymph nodes were the most common lesion found at autopsy, but they were usually associated with tuberculous lesions elsewhere, most often in the lungs, often with abdominal lesions and occasionally with involvement of the cervical lymph nodes. So far as he knew, no one in New York had seen many cases at autopsy evidently due to intestinal infection: Northrup and Hodenpyl had noted but 1 case; Bovaird had seen four; he himself had seen three, and another had occurred, recently, at the New York Foundling Hospital. Observers in Europe reported an entirely different experience. Guthrie in seventy-seven autopsies on tuberculous cases at the Children's Hospital, Paddington Green, London, found 22 per cent. of the cases of intestinal origin. Still, in 269 autopsies, found 23.4 per cent. of the cases of intestinal origin. Heller, of Kiel, in 764 autopsies on children that had died of diphtheria, found tuberculous lesions in 140 cases, and 38.8 per cent. were primary intestinal tuberculosis. Wagner had found 17 per cent. of primary intestinal and mesenteric lymph node tuberculosis in his autopsies. These tuberculous lesions of the intestines were often very small and were apt to be overlooked, unless the intestine was examined without separation from the mesentery. Sims Woodhead had noted that in children who had died from other diseases there were tuberculous mesenteric lymph nodes when there was not a trace of tuberculosis elsewhere. Tuberculosis of intestinal origin might be more common in Europe than in this country, but it was probable that the difference was due to a more careful search for tuberculous lesions, or to a different opinion as to what was sufficient evidence of intestinal origin. He thought that many cases seen at autopsy with considerable involvement of the mesenteric lymph nodes might be due to intestinal infection, in view of certain findings in animals. Straus, of Paris, in a series of experiments, injected tubercle bacilli into the stomach by means of a catheter in order to avoid the possibility of infection by inhalation, and found that the tuberculous lesions resulting were in the cecum, mesenteric lymph nodes, liver, spleen, bronchial lymph nodes and lungs—just such a distribution as is often found in our autopsies, but never attributed to intestinal infection. One injection which Straus made into the trachea by mistake resulted in lung lesions only. The rule in intratracheal injection was for the lesion to be confined to the lungs and pleura. It was evident that tubercle bacilli which gained access to the body by the intestines were readily carried by the lymph stream to the thoracic duct into the superior vena cava, the right side of the heart and out into the lungs. Living tubercle bacilli had been found to exist fairly frequently in ordinary milk, and it had been shown by Ravenel and others that bovine tubercle bacilli were pathogenic for man. It had been demonstrated that the tubercle bacilli survived the action of the gastric juice, and the fact that we found lesions of undoubted intestinal origin confirmed the fact that they could pass through the human stomach uninjured. It had been recently shown that the tubercle bacilli could pass through the uninjured wall of the alimentary tract of the very young. It had recently been shown by MacFadjen and MacConkey that tubercle bacilli existed in many mesenteric lymph nodes that showed no evident lesion.

Topography.—In 416 autopsies on tuberculous infants from one to four months old, Froebelius found the lungs involved in 100 per cent. of the cases, bronchial lymph nodes 99 per cent., the intestines in about 27 per cent., and the mesenteric lymph nodes in 16 per cent. Schwer in 123 autopsies found the respiratory organs involved in 85 per cent. of the cases and the intestines in 50 per cent. Carr, in 120 autopsies, found the lungs involved in 75 per cent. of the cases, the bronchial lymph nodes in 80 per cent., the intestines in 55 per cent., and the mesenteric lymph nodes in 54 per cent. Biedert had collected data from 1,346 autopsies on tuberculous children and found the different organs involved as follows:—lungs 79.6 per cent., bronchial lymph nodes 78 per cent., intestines 31 per cent., mesenteric lymph nodes 40 per cent. He thought that it was impossible to state in which tract invasion originally occurred, for in cases of intestinal origin the lungs and bronchial lymph nodes might very soon show lesions and, as soon as the lungs became involved, a reinfection of the intestines from swallowed sputum might take place. The results of 158 autopsies on tuberculous children showed that there were 64 per cent. of deaths during the first year against only 34 per cent. during the second; two-thirds of the cases during the first year occurred between the third and the ninth month. In cases with lesions of the mesenteric lymph nodes or intestines, or both, the percentage was quite similar. The average age at death was later among tuberculous children than among other children. Tuberculosis in infancy was a sufficiently acute general disease to cause death very often before marked emaciation took place. The nutrition of the tuberculous cases was not materially worse than that of the nontuberculous cases. The most frequent lesion was in the bronchial lymph nodes, about 76 per cent.; the lungs next, about 71 per cent.; and the mesenteric lymph nodes or intestines in nearly 30 per cent. The meninges were involved in 21 per cent. of the cases. As to the general distribution of the series of 158 cases, 36 had thoracic lesions only, 92 had abdominal lesions and 25 cranial lesions. In another table that showed the distribution of the lesions in 52 cases involving the mesenteric lymph nodes or intestines, or both, 6 cases showed thoracic lesions but no other abdominal lesions, while 29 cases showed involvement of other abdominal organs and the thorax and 12 cranial lesions in addition.

Clinical Manifestations.—Usually an acute, widely disseminated affection which, in a considerable number of cases, involved the bronchial lymph nodes and lungs, it might remain encapsulated in the lymph nodes and never spread; or it might remain encapsulated for a time and then, under the influence of some other disease, it might spread to the lungs and other organs; or it might never become encapsulated but spread immediately through the lymphatics to the bronchial lymph nodes, to the lungs and other organs. The presence of miliary tubercles gave but slight and indefinite signs, and it was often only when the meninges became involved that a definite diagnosis could be made. The original infection was apt to be associated with a rise of temperature, which would afterward decline to nearly normal, with but little elevation again until near the termination of the disease. Tuberculosis of the lungs usually showed merely râles or slight changes from normal respiration and it was only in advanced stages that consolidation appeared. There was apt to be thickening of the pleura, so that increased dullness or flatness and diminished breathing were added to the signs. The enlarged bronchial lymph nodes could rarely be made out. The involvement of the meninges, which occurred in about 21 per cent. of cases according to his experience, had typical symptoms. The disposition changed suddenly from amiable to irritable, vertigo, persistent vomiting, gradually increasing stupor, often with eye symptoms and one-sided paralysis, disturbance of respiration, and later the automatic movements, mask-like face, occasionally convulsions, and usually but slight temperature. Stiffness at the back of the neck, with or without opisthotonos, was common. The Kernig sign could usually be elicited. Enlargement of the liver or spleen might also be confirmatory signs. The duration of the disease was two, three or four weeks. Unresolved pneumonia, which it often became necessary to differentiate from this disease, could usually be distinguished by the marked physical signs, the higher temperature, the slow course and the marked emaciation. He had rarely seen tuberculous peritonitis or the local infections in young children. Tuberculous cervical lymph nodes were rarely found in infants, an argument perhaps against respiratory infections in infancy.

Summary.—Tuberculosis in infancy arose usually from either the respiratory or the alimentary tract, but the comparative frequency of these two modes of infection had not yet been determined. The tuberculosis of early life was most common during the first year when children were on an exclusive milk diet; much milk contained tubercle bacilli, and bovine tubercle bacilli were pathogenic for man. At this period, owing to the structure of the intestinal wall, bacteria could probably pass through it, although it was uninjured. Experiments on animals showed that inhalation tuberculosis caused usually lesions of the bronchial lymph nodes and lungs alone; wherever the portal of entry might be these structures were early involved. Inoculation experiments proved that the mesenteric lymph nodes might be tuberculous without the presence of any gross lesions. Mesenteric or intestinal lesions could be detected on gross examination in 26 per cent. of the autopsies which he had done. The tuberculosis of infancy, unlike that of later life, was usually an acute, widely disseminated, general disease with moderate temperature and few symptoms and physical signs unless the invasion of the meninges gave rise to symptoms. Tuberculosis of the cervical lymph nodes and of the joints was rarely seen under the third year. The power to overcome a tuberculous infection that had invaded the organs did not apparently exist in infancy.

While the tabulated autopsies showed a wide distribution of the tuberculous disease in these infants, they probably indicated a much less general distribution than really existed, for the data were based on hurried gross examinations without microscopic confirmation. A series of autopsies in which the intestines were carefully examined without separation from the mesentery and with microscopic examination of all suspicious thickenings would probably show a much larger proportion of intestinal involvement and a still greater proportion could be found by animal inoculation.

THE INFLUENCE OF BOVINE TUBERCULOSIS ON HUMAN HEALTH.

DR. MAZYK P. RAVENEL read this paper and referred to the confirmation of his belief in the intercommunicability of the disease, just as he had insisted for years, saying that he had established certain facts and conclusions which were irrefutable. The study of the cultures of the tubercle bacilli in man and in animals showed no differences that could aid us in determining the origin of the disease. The tubercle bacilli had greater pathogenic power for all animals except swine. He considered the increased susceptibility in animals, the virulence of the bovine tuberculosis, the effects of bovine tuberculosis on man, etc. He reported cases in which there was great resistance to ordinary methods of treatment and cure only obtained after radical excision of the affected parts. He said that the belief that the dried sputum spread tuberculosis was the commonly accepted one, but this was not supported by clinical evidences. He said it was the bovine tuberculous material taken as food that played a part in causing human tuberculosis. Experiments had shown that the tubercle bacilli could penetrate the healthy mucous membrane and not leave any track and the lungs might become affected through infection by way of the intestines. The figures regarding primary lesions were not at all to be relied upon because they were not uniform. He thought that no doubt the tonsils were the portal of entry for the tubercle bacilli in many cases, although he greatly believed in infection from the ingestion of tuberculous meat from cows. Bovine tuberculosis was a scourge especially on farms near large cities.

THE PREVENTION OF TUBERCULOSIS IN CHILDREN.

DR. HERMAN M. BIGGS read this paper, which was published in full in ARCHIVES OF PEDIATRICS, May, 1904, page 321.

DISCUSSION.

Dr. Thomas Darlington, Commissioner of Health, said that, so far as he was concerned, there was no question regarding the entrance of the germs by way of the lungs. During the construction of the Croton Aqueduct, he made postmortem examinations and found that, in the smaller bronchioles, there were a great many particles of ground rock and dust; the dust, in fact, penetrated every part of the lungs. He believed it was a simple matter to acquire tuberculosis from impure milk. Many physicians had had cases of diarrhea in infants, which persisted, and which could not be checked, which finally developed symptoms of phthisis; it was a common observation that children with a chronic diarrhea frequently developed phthisis. In a large hospital near New York, where the consumptives were allowed to play quoits in a pasture near the hospital, they would not use spit-cups but would spit upon the grass. There were ten cows grazing in the pasture and when these were killed it was found that nine of them had general tuberculosis, caused by the ingestion of the infected grass.

In regard to the entrance of the tubercle bacilli through the tonsils, adenitis, rhinitis, carious teeth, etc., he believed these were avenues of invasion. The children in the Foundling Asylum had, as a rule, bad teeth and he had seen several cases recently where there were enlarged nodes, an adenitis going on to abscess formation; the pus examined in these revealed tuberculous material in abundance.

With children exposed to tuberculosis he believed it was necessary to remove them from their surroundings. He acknowledged the difficulty of taking these children from their homes because the mothers would not wish them to be removed. It was far more difficult to take away a sick child than a well one. He believed that when children were sent away they should be not too far from their parents, so that the latter could visit them. He said that it had been proven that tuberculous milk could give tuberculosis to children and he advised that milk should be pasteurized. The treatment of children affected with tuberculosis chiefly consisted in fresh air and rest.

Dr. William P. Northrup said he wished to cite an instance which recently impressed him very much with what the Board of Health of this city was doing to prevent the spread of tuberculosis:—A woman came to the out-department of the Presbyterian Hospital to get aid in having her husband taken into the hospital. As her husband was suffering from tuberculosis, she was told that he could not be admitted, but that he should be taken care of at home. She objected to this because when her husband used the spit-cup a little of the sputa would occasionally spatter on the floor and so endangered the children. Dr. Northrup said this showed what the local Board of Health was doing in disseminating knowledge regarding this disease.

After referring to the seeming extreme views held by the readers of the papers he said he was convinced that the statement made by Dr. Biggs was true, and that tuberculosis could easily be contracted when under favorable conditions. He had followed the subject of inherited tuberculosis a little, and it had been his privilege to make autopsies at the Foundling Hospital and he had been able to verify the lesions in several cases. He cited the instance of a dying woman whose child was taken by Cæsarean section and, in the circulating blood of this child were found tubercle bacilli. The thought occurred to him that these bacilli might have been milked into the circulation of the fetus by reason of manipulations of the uterus, the placenta and cord.

He referred to another instance of a woman dying from tuberculosis, and who had numerous cavities in both lungs. The baby was born and the mother died eleven hours afterwards. He watched this child until it came to autopsy, about six weeks later. It was then found that there were several tuberculous lesions. He could recall but one instance of a child born with tuberculous lesions.

He believed that the portal of entry could be at any place where the tubercle bacilli lodged on the mucous membrane and later were transmitted to adjacent lymphatic nodes; these latter struggled against the invasion of the tubercle bacilli and oftentimes prevented further infection. The nasopharynx, the pharynx, the tonsils, the upper part of the respiratory tract, etc., might all become portals of entry, if the germs lodged on the mucous membrane under favorable circumstances. Although he did not wish his audience to underestimate the digestive tract as a port of entry he asked that they should not underestimate the role the respiratory tract played in the production of tuberculosis.

He said that Dr. Ravenel had little to say regarding the bronchial lymph nodes. In 125 autopsies of his own on tuberculous patients, in all the bronchial lymph nodes were involved and in only one the mesenteric lymph nodes. Dr. Northrup could not see how the bronchial lymph nodes could become affected through tuberculosis which invaded the intestines. He referred to Dr. Bowditch, of Boston, who made autopsies on 369 cases and in only 1 per cent. was the mesenteric lymph nodes involved.

Dr. Charles N. Dowd said it had been emphasized that tubercle bacilli could gain entrance to the body through the digestive and respiratory tracts; but the diminution in the number of cases was not emphasized. Dr. Biggs' statistics he said were certainly most encouraging along the lines of research and it showed the good work being done by the New York Board of Health.

What had been said regarding the mesenteric lymph nodes as a portal of entry for the tubercle bacilli corresponded with his own observations. He referred to the invasion of the cervical lymph nodes when there were tuberculous processes in the other parts of the body and wondered why this was. In a study of

100 cases which had been followed for years (22 cases for more than two years and 25 cases for more than five years) it had been noted that only one patient showed evidences of pulmonary tuberculosis. These were all cases of surgical tuberculosis; many of them had cervical tuberculosis. One was a case of tuberculosis of the hip; another was spinal; 10 had tuberculosis of the axillary lymph nodes; and only one gave evidences of pulmonary tuberculosis.

As to the source of the tuberculosis in the cervical lymph nodes out of the 100 cases, 87 were infected directly from the tonsils or fauces. Where the nodes at the angle of the jaw were involved, the source was from the pharynx. In 10 in the submaxillary region the infection was from the mouth. As a result of a study of this series it showed that the vast majority of the cases were infected by way of the tonsils or pharynx.

The last 1,000 cases seen at St. Mary's Free Hospital for Children, were tabulated to see how many were tuberculous; out of this number, 212, or 21 per cent. were tubercular. This was three times as many as occurred in adult hospitals, for Dr. Bull's clinic showed but 7 per cent. The distribution of these cases were as follows:—158 in bones and joints; 40 in lymph nodes; 5 genito-urinary; 5 peritoneal; 2 lupus and 2 of tendon sheaths. The majority of these cases were found in the bones and there was no knowledge regarding the source of infection except through the circulation. There had been ten instances of infection of the iliac and femoral lymph nodes from foot wounds.

Dr. Hamill, of Philadelphia, said that in 1896, he published a paper on "Primary Tuberculosis of the Kidney in Infants and Children." In discussing the mode of infection, he said: "I am led to think in this connection, of the possibility of the entrance of tubercle bacilli into the circulation without the development of localized lesions at the portal of entrance. That such an occurrence is possible need scarcely be detailed at length, in view of the investigations of Loomis and others, and in view of the general experience of pathologists showing the frequency of caseous tuberculosis of the bronchial glands without discoverable lesions in the lungs or elsewhere. There is little doubt but that in such instances the bacilli penetrate the alveolar walls and, gaining access to the lymphatic channels, are conveyed to the bronchial glands without having occasioned disease at the point of entrance. The same possibility of cryptogenetic infection through the gastro intestinal tract is evidenced by the frequency of tuberculous disease of the mesenteric lymph glands, without the occurrence of intestinal lesions. While it must be admitted that infections of this kind have not been shown to be of frequent occurrence, at least in so far as tuberculous lesions at a distance from the possible portals of entrance are concerned, it must, nevertheless, be borne in mind, in cases of tuberculous disease of deep-seated organs in which the mode of infection seems obscure."

This view was not original, but it had not been expressed frequently up to that time. Since then, however, while not having been definitely proven, it had been accepted and advocated by many investigators. In the light of these facts, and more especially in the light of the striking results in some of the feeding experiments of Ravenel, we were prepared at the present day to venture the statement that infections through the alimentary tract may result in lesions far removed from the point of entrance of the infecting microorganism.

Tuberculous lesions of the tonsils, with secondary involvement of the deep cervical lymph nodes, we all admitted. That these infections result from particles of infected food being retained by and absorbed from the tonsillar crypts, had been definitely demonstrated by the feeding experiments of Ravenel and others as well as by the exhaustive statistics of Friedman and Dieulafoy. This form of alimentary infection, therefore, could be accepted as proven and common. Tuberculous lesions of the intestines, together with tuberculous involvement of the lymphatic nodes, as well as tuberculosis of these latter nodes, without demonstrable lesions in the intestines, has been proven in like manner. These were facts which were generally admitted and accepted as satisfactory proof that tuberculosis of alimentary origin was a possibility. Those who considered this mode of infection as uncommon, are not willing to admit its possibility without the demonstration of the lesions just cited. In the light of our present knowledge, this attitude would seem unreasonable.

By the experiments of Nicholas and Descos, quoted by Ravenel and by his own experiments, it had been shown definitely that tubercle bacilli can penetrate the intestinal tract and pass into the circulation without any evidence of lesions of any nature in the walls of the intestine. It was impossible to hold that these bacilli, once in the circulation, could not produce a generalized tuberculosis or be deposited at some susceptible point in the body and give rise to a localized tuberculosis. The lymphatic system of early life is especially susceptible to infection and, on the basis of experience, we must recognize that the bronchial lymph nodes seemed to be the especial point of election for invasion with the tubercle bacillus. Those who hold to the view that they became infected through the lungs by penetration of the alveolar walls and, thus gaining access to the lymphatic ducts, were borne by them to the bronchial nodes, must admit the relatively less susceptibility of the lungs to tuberculous invasion. It being admitted then that the lungs are less susceptible than the bronchial nodes why was it not reasonable to assume that the bacilli which are taken up by the circulation from the intestinal tract, are carried through the heart to the lungs and that they there find access to the lymphatic channels by which they are conveyed to the susceptible bronchial nodes where they find desirable soil for their development? The proof of such a course, in the light of our present knowledge, was impossible, but from the facts, its assumption was justifiable. The statement by Ravenel that the bovine tubercle bacillus had been isolated by Kossel in a case of bronchial adenopathy would seem to be the proof needed.

Another possible mode of infection of the bronchial lymph nodes through the medium of the intestinal tract had been suggested, and that was by the conveyance of the bacilli from the mesenteric nodes through the medium of the thoracic duct to its point of junction with the efferent vessels of the bronchial nodes and their conveyance from this point by means of a reverse current to the bronchial nodes. This course appeals to one as much less reasonable. Its existence, however, ought to be fairly easy to determine for the reason that, in the event of such a mode of infection, the lesion would necessarily be limited to the group of bronchial nodes to the left, since the efferent vessels of those to the right empty into the right lymphatic duct.

If, therefore, we were prepared to believe that organs at a distance from the intestinal tract could be infected by tubercle bacilli admitted through its walls, we could not deny that many of the generalized or pulmonary tuberculoses which develop as a sequence to the various infectious diseases of infancy and childhood, primarily have their origin in the intestinal tract.

The bronchial nodes might be involved in this manner and remain latent for an indefinite period, finally being stimulated into activity by some acute process and thus driven to unload their bacilli into the circulation at a time when the general or perhaps local resistance was weakened; new foci of tuberculosis were thus started up. These new foci might eventually become the most advanced lesions and at autopsy have the appearance of being older than the lesions in which they had their origin, thus entirely masking the point of original infection.

Again, it had been clearly demonstrated, as Dr. Ravenel had shown, that the bovine bacillus possessed greater virulence than the human bacillus for animals of all types. He further believed, for reasons mentioned, that this virulence extended to the human species. We knew, also, that children were more susceptible to infection than persons of a more advanced age. Was it not possible, therefore, that, the greater virulence of the bovine bacillus, together with the decreased resistance of early life, were responsible for many of the outbreaks of general tuberculosis in infancy, which we were unable satisfactorily to explain?

The point, upon which emphasis had been laid by Dr. Dowd, that in the great number of cases of infection of the deep cervical lymphatics, few became generally infected, together with the frequent involvement of the bronchial lymph nodes without tuberculous lesions elsewhere, would seem to confirm the belief he had, that certain sets of lymphatic nodes were more capable of protecting the system against generalized infection than were others. This would account for the frequency of the extension of tuberculosis of intestinal origin beyond the mesenteric lymphatics.

It might be possible that the number of bacilli of various types, finding entrance into the lymphatic nodes through the intestinal tract, was so great as to overtax the function of these nodes and that it was, therefore, easier for them to pass beyond these nodes into the thoracic duct and thence into the general circulation.

Dr. John H. Girdner said that he had had occasion to make frequent observations of the people who lived in the mountainous districts of Eastern Tennessee and North Carolina and he had been surprised to find what a large number of children suffered from tuberculosis of the cervical lymph nodes; they were mere enlargements, not suppurating or coming to the point where they discharged pus. Occasionally, some children showed the characteristic scars, the nodes having broken down, discharged and healed. The percentage of cases in these mountainous districts were unusually large. He tried to find the cause of the infection. Some had tuberculosis of the lungs, and there was a great deal of "white swelling," also tuberculosis of the hip joint and caries of the spine. But, in nearly all cases, there was found invasion of the cervical lymph nodes. These people lived in the gorges of the mountains and this region was sparsely settled and there was but little opportunity for infection to occur by way of the air passages. The children lived largely upon milk, cheese and butter. The cattle had been bred there for generations and they were the so-called "scrub-mountain cattle." While he had never made any experiments with tuberculin he thought these cattle were tuberculous. He believed that these children had been for years infected by the milk of these cattle. Therefore, in these regions, the most frequent mode of infection was by the milk of tubercular cows.

Seaside Sanatoria for Children in France.—There is an association in Paris—l'Œuvre des Hôpitaux Marins—which endeavors to secure upon the coasts of France establishments for the treatment of scrofulous or tuberculous children of both sexes. The utility of this work has already been recognized by a decree of September 9, 1890, and from its own resources the association has already created the maritime sanatoria of Banyuls-sur-Mer, in the Pyrénées Orientales, and of Saint-Trojan in the Ile d'Oléron. In each establishment there are two hundred beds, and treatment is given to children of either sex between the ages of four and fourteen. The patients are received from public institutions and private families, the charge to the latter being but forty cents a day, to the former thirty-four cents. Strange to say, however, many beds are unoccupied, despite the fact that thousands of children are encumbering the hospitals in the cities.—*New York Medical Journal and Philadelphia Medical Journal.*

THE PHILADELPHIA PEDIATRIC SOCIETY.

Stated Meeting, Tuesday, April 12, 1904.

JOHN H. JOPSON, M.D., PRESIDENT.

A CASE OF TUBERCULOUS MENINGITIS, TUBERCULOUS ARTHRITIS AND GONOCOCCAL VULVOVAGINITIS.

DOCTORS S. McC. HAMILL and WILLIAM G. SPILLER presented the patient, a girl of two years. The child was perfectly well until July, 1903, when she had an attack of measles which was followed by a severe pulmonary condition thought to have been bronchitis. This pulmonary condition has persisted to the present time, although the child had gained in flesh and was unusually fat. During all of this time she had been irritable and feverish. Prior to two months ago she was vomiting frequently. For some weeks she had been having four or five loose, bright-yellowish, mucous stools daily.

In October, 1903, the child developed a paresis of the entire left side. The loss of power in the arm and leg was thought to have occurred before the paralysis of the face, which came on gradually and involved the entire distribution of the nerve. Shortly after the facial paralysis, left internal strabismus developed, coming on suddenly during the night. In January, 1904, the left ankle began to enlarge and grow painful. Preceding this, she had marked cramps in the left leg. At present, she is irritable, takes no interest in her playthings, and occasionally, while sitting in her mother's lap or on the floor, she will cry out that she is falling downstairs. She has never fallen. She has no headache and has had no convulsive seizures. Five or six weeks ago, while in the Rhode Island General Hospital, she developed a gonococcal vulvovaginitis. She runs a persistent mild temperature, from 99° to 100.5° F.

The physical examination showed the left external rectus to be paretic and the right external rectus weak, although not to the same degree. All the muscles in the innervation of the left facial nerve were paralyzed, so that the child could not close the left eye or draw up the left corner of the mouth. The left upper and lower limbs were weak, but they could be moved voluntarily. Sensation was not affected. The patellar reflex was diminished on each side. There was an area of consolidation at the base in the right lung close to the vertebral column.

An examination of the eyes by Dr. Hansell showed both optic nerves atrophied and the blood vessels of both eyes greatly lessened in calibre, but there were no nodules to be seen in the eye-grounds.

The persistence of the pulmonary symptoms, more especially the pulmonary signs, the occurrence of the joint affection, its gradual development and persistence, the peculiar character of the swelling, involving the back of the joint and obliterating the post-malleolar hollows, and the extending around and below each malleolus, producing a pyriform swelling, the marked irritability and gradually developing meningeal signs, led to the inference that the pulmonary, joint and meningeal manifestations were all tuberculous in origin. The possibility of gonococcal infection was suggested, but it was clearly demonstrated that the vulvovaginitis had developed sometime after the presence of the other symptoms.

The point of interest in the treatment was the rapid disappearance (within ten days) of the vulvovaginitis under the use of douches of boric acid solution (10 per cent.), followed by the introduction of 1 ounce of 5 per cent. solution of argyrol, which was retained in place by means of a pad.

Dr. Jopson asked Dr. Spiller whether the cerebral condition could not be a tuberculous tumor. This diagnosis had suggested itself to Dr. Jopson on account of the comparative frequency of these growths in childhood; because the disease of the ankle joint is, in all probability, tuberculous; because of the paralytic symptoms; and because of the slow progress of the case.

Dr. Spiller replied that he thought that the symptoms could not be explained by the existence of a tuberculous tumor. He had considered this possibility, and had reached the conclusion that if it was a tumor at all, it was a tumor of the pons. If a tumor of the pons were present, the facial paralysis would probably be on one side, and the palsy of the limbs on the other; while in this case, the contrary was true. Furthermore, the facial palsy was of peripheral character, all branches of the facial nerve being involved. It was, therefore, apparently a separate condition from the palsy of the extremities, and it developed some time after the limbs had become paretic.

Doctors S. McC. Hamill and W. C. Posey presented

THREE CASES ILLUSTRATING ASSOCIATED MOVEMENTS OF THE HEAD AND EYES.

All of the children were colored and markedly rachitic.

Case 1, aged three years, showed a lateral nystagmus of equal excursion in both eyes with a rotary spasm of the head, during which the head was turned to the right and the chin elevated, indicating action of the left sterno cleido mastoid muscle. This child showed some limitation in the excursions of the extraocular muscles, a mild ataxia and some defect of vision. The ataxia and defective vision were thought to have been confusional in origin. The condition developed in this patient at the age of three years, which is unusually late, the majority of cases occurring between the second and twelfth months of life.

In Case 2, the movements began between the third and fourth months, involving both the head and eyes. They were equal on both sides. This child had intermittent spasmodic contractions of the muscles of the back of the neck.

In Case 3, there were no head movements noted at the present time, and according to the mother's statement, none had ever existed. The nystagmus was mainly in the right eye and was supposed to have existed since the third month of life. In this case, vertical vibratory movements of the upper eyelid were produced once or twice on an attempt at sudden fixation. Strabismus was not noted in any of the cases.

The pupils were normal in size and reacted normally in all cases, and there were no changes in the fundi other than a moderate dilatation of the retinal veins in Case 1. The eyes in all 3 cases were moderately hypermetropic.

The underlying factor in the production of all these cases was thought to have been rickets. The theory of Hadden as to the nature of these movements is that accepted by the authors.

Dr. D. J. Milton Miller considered it very significant in the etiology of the condition that almost all the cases shown before the Society had been in negro children. In his experience, also, most of the cases have been in negroes. These facts point toward the great importance of rickets in producing the condition. Dr. Miller had noted that one of these cases followed a rather severe bronchitis, and asked whether any depressing illnesses had preceded the condition in the other cases. Preceding disease is very common; measles, in particular, seems to have a certain tendency to be followed by the condition in children predisposed to it. Raudnitz has attributed the affection wholly to eye-strains; but, in an investigation made some years ago, Dr. Miller found that this was present in only a small proportion of the cases. All authorities agree as to the functional nature of the affection, and incline to attribute it to expansion of the centres presiding over the muscles of the eye or of the head; which is as much as to say that we are ignorant as to its nature.

Dr. Hamill, in reply, said that there was no apparent relation with any immediately preceding disease in 2 of the cases.

CASE OF DEFORMITY OF THE CHEST.

Dr. Ralph Pemberton showed a case presenting an unusual deformity of the chest, apparently the result of rickets, that occurred in a colored child two years of age. This child had marked signs of rickets; and, when admitted, had general tenderness, and discolored, sore gums, suggestive of scurvy. The deformity was a curious knuckling of three ribs (the sixth, seventh, and eighth), on the left and above the costochondral junction. It had formed a bony projection about the size of a walnut, resembling a fracture with redundant callus. The condition was absent on the other side. It appeared to give the child no inconvenience.

Dr. J. P. Crozer Griffith said that he had been impressed with the way in which the condition simulated fracture, but he considered it to be merely rickets. As an instance of the remarkable deformities that may be produced by rickets, he mentioned a case in which, while the child was under observation in the hospital, a truly remarkable hollowing of the chest upon one side occurred, owing to the child's habit of lying upon this side.

Dr. Miller referred to the interesting frequency of rickets in negroes and Italians in this climate; while, according to the statements of many Southern physicians, it is relatively uncommon among the negroes in the South. Along the coast of Maine, also, where the children are fed in a most unhygienic manner, whether from breast or from bottle, rickets is uncommon. Such facts indicate, to Dr. Miller's mind, that there is a climatic element in the production of rickets. Possibly the fact that races like the negroes and Italians, whose ancestors, for generation upon generation, have lived more or less in the open air, are very susceptible to the confined life of cities, may explain this. Perhaps a few generations of city life will make this susceptibility less.

ALVEOLAR ABSCESS FOLLOWED BY ACUTE HYDROCEPHALUS.

Dr. Sumner H. Cross reported the case occurring in a child ten weeks old. The baby had been well until six or seven weeks old; then he became fretful, lost weight, and cried when lifted. He was seen for swelling of the right side of the face, associated with fever and marked gastrointestinal disturbance. He was poorly nourished. The swelling of the right side of the face was most marked over the superior maxilla and about the eye, which was entirely closed. There was a slight, dark-blue discoloration on the cheek. The gum over the right half of the upper jaw was swollen, soft, and tender, and showed a dark discoloration, which extended over the hard palate as far as the median line. The throat was negative, and there was no nasal discharge. There was no pain on moving the extremities, but the child experienced pain on being lifted. The blood-count showed hemoglobin, 55 per cent.; red corpuscles, 3,380,000; and leukocytes, 12,000.

Five days after this, pus was discharged from two openings on the alveolar margin, and from one opening at the junction of the alveolar and the buccal mucous membrane. An analysis of the mother's milk revealed about normal conditions, but, owing to the continued severe gastrointestinal derangement, the baby was put on a milk-mixture. After the escape of the pus, the child's temperature became normal and there was general improvement. The swelling disappeared, but the discharge of pus continued until three weeks later, when a very small piece of bone was discharged. After this, the opening closed. Soon afterwards, there was swelling of the lower right eyelid, with tenderness, redness, and fluctuation; and a small incision evacuated about half a dram of pus. Subsequently, a small amount of pus was continuously discharged from this opening.

After this some improvement took place for three weeks, at the end of which time the child suddenly became worse. The veins over the scalp, especially on the right side, became prominent; he vomited after every feeding, and was restless and feverish. An acute hydrocephalus developed, the circumference of the head increasing to nineteen inches. Examination of the eyes, at this time, by Dr. Posey showed engorgement and tortuosity of the retinal veins, but no other abnormality. The mother's eyes, also, showed evidences of a previous extensive choroiditis. The child was put on inunctions of mercury, and the size of the head decreased rapidly, but he was unable to retain nourishment, and emaciated continuously. Clonic convulsions developed, involving the whole body, and there was a tendency to opisthotonos. The child died two days later, and an autopsy was not permitted.

Dr. Posey said that he had seen the child two weeks after the head-swelling had begun. At that time, he had observed marked tortuosity of the retinal vessels. The case was a very interesting one, on account of the occurrence of a maxillary abscess followed by swelling of the head. The latter subsided under the use of mercury. These facts, in connection with the fact that he had previously seen the mother and had found in her choroids extreme changes that he thought to have been caused by syphilis, led Dr. Posey to believe the condition to be syphilitic.

Dr. J. A. Scott thought that there is too much tendency to call all conditions that respond favorably to the use of mercury, syphilitic. In his opinion, Dr. Cross's case might well have been one of streptococcic infection. He mentioned a case recently seen by him, in which the symptoms had begun in much the same way. The child first presented swelling of the jaw, and afterwards there occurred temporary swellings in various parts of the face. These, a dermatologist considered to be erythema fugax, an extremely rare condition. The child died after about two weeks, owing to severe digestive disturbance. The postmortem examination showed absolutely no evidence of syphilis, but beneath the scalp there was a small collection of pus, which during life had appeared to be edema. There was also a general streptococcic infection.

Dr. Cross, in reply, said that it had been impossible to make a definite determination of the etiology in his case, but that he was inclined to believe that it may have been a general bacterial infection, similar to that in Dr. Scott's case. It had been considered a manifestation of hereditary syphilis, on account of the absence of fever, the extensive choroidal changes in the mother's eyes, and the rapid decrease in the hydrocephalus under the use of mercurial inunctions.

Dr. Theodore Le Boutillier reported a case of

THICKENING AND TORTUOSITY OF THE ARTERIES IN A CHILD OF TWO YEARS.

The family history was negative. The child had had pneumonia, followed by cervical and post-pharyngeal abscess. When seen, the lungs were normal, the heart was not enlarged, and there were no murmurs; but the aortic second sound was much accentuated and all the arteries—especially the carotids, the temporals, and the radials—were hard and tortuous. The child died, and an autopsy could not be obtained.

TWO CASES OF EMPYEMA.

Dr. John H. Gibbon reported the cases. One occurred in an infant of twelve months, which was seen four weeks after the beginning of the attack. The latter had followed a very severe pneumonia. When seen, the child had an extensive empyema, her condition being so bad that it was considered unwise to remove the fluid rapidly. Hence, 5 or 6 ounces of pus were withdrawn with an aspirating needle; and, without using an anesthetic, an incision between the ribs was made and drainage was introduced, the dressing having been applied before the chest had been allowed to empty itself entirely. There was free discharge afterward, and the child immediately improved, but a few days later it developed a pneumonia of the other side, of which it nearly died. Ultimately the patient recovered completely, both lungs performing their functions in a satisfactory manner. When first seen, the infant had a palsy of the left hand and foot, but this also passed away. Dr. Gibbon had not previously operated for empyema upon so young a child.

The second case occurred in a boy of seven years seen in the Polyclinic Hospital. He had had imperfect drainage of the left chest for empyema some weeks previously. When first seen by Dr. Gibbon, he also had empyema of the right chest and a pyemic abscess of the right shoulder. The two pleural cavities and the abscess were necessarily drained at once, a small amount of anesthetic being used, and resection of the ribs being rapidly performed. The time consumed in operating was only eleven minutes, and Dr. Gibbon considers that in such cases it is very important to operate with great rapidity. The patient did well until several weeks later, when, while at home, he died very suddenly, the doctor in charge having just changed the dressings. This case is of interest, on account of the occurrence of sudden death, in spite of the fact that irrigation of the pleural cavity had not been carried out.

Dr. Miller said that in his last service at the Children's Hospital he had had 14 cases of croupous pneumonia in children under two years of age. Among these, there had occurred 2 cases of empyema; one in a child of eighteen months, and the other in a baby ten months old. Dr. Miller believes empyema to be more common in infants than is usually supposed. Unfortunately, it is very likely to be overlooked, as there are but two reliable signs: marked flatness, with resistance, upon percussion, and the results of exploratory puncture.

Dr. J. H. McKee mentioned a case of empyema in an infant that was three months old when seen, and had been operated upon two weeks previously. A drainage-tube had been inserted between the ribs. Owing to the narrowness of the interspaces in so young a child, some difficulty in inserting the drainage-tube without resecting a rib had been expected. At Dr. G. G. Davis' suggestion, the costal cartilages, which are extremely soft at that age, had been pushed aside with hemostatic forceps. The drainage through the tube had been good, but the infant died.

Dr. Griffith thought that empyema in young children is not uncommon. He did not know the exact figures at the Children's Hospital, but was inclined to believe that there had been more cases than Dr. Gibbon had suggested. At any rate, it is a fact that when infants get pleural effusions, these are very likely to be purulent. He mentioned 1 case that he had seen in an infant of eight months, in which pneumothorax, as well as pyothorax, had developed. He had also seen a child of three months whose case was similar to that of the infant mentioned by Dr. McKee, and believed that it must have been the same child. Dr. Griffith had seen it before it was operated upon. This was the youngest patient with empyema ever seen by him.

Dr. W. G. Elmer, in connection with the danger of sudden death from the rapid withdrawal of a large amount of fluid in extreme cases of empyema with the utmost degree of cardiac displacement, mentioned a case in a child of three years, in which there was such a large effusion that he was afraid to attempt to withdraw the fluid rapidly. Hence, he adopted the plan of aspirating the chest on each of several successive days; withdrawing in three days, three pints and a half of pus. This so relieved the child that he felt it to be safe to introduce a trocar and canula, passing a small rubber drainage-tube through the canula, well down into the pleural cavity. He then withdrew the canula, leaving the drainage-tube in place, and so permitting continuous drainage for one week. After this, he established more formal drainage under chloroform anesthesia. This child recovered completely. During its convalescence, it was induced to blow soap-bubbles several times daily, as a satisfactory substitute for the use of Wolff bottles to inflate the lung, for it was too young to be taught the use of the better method.

Dr. Jopson said that in looking over the reports of the Children's Hospital, he had found that of 50 cases of empyema, 4 or 5 were in infants less than one year old. He believes that there is no real difficulty in introducing drainage in young children without resecting a rib. The real trouble is caused by the presence of masses of lymph, which tend to obstruct the tube. He said that Dr. Gibbon's case of double empyema had furnished an example of the method of treating such cases. One side should be drained first, and then the other, in order to avoid emptying the fluid from the chest too suddenly.

Dr. Gibbon said that in his opinion a good procedure, in order to avoid the necessity of resecting a rib in such cases, is to bite out with a Rongeur forceps a semicircular piece from the upper edge of a rib, and allow the tube to lie in this space. This prevents compression of the tube and a blocking of the flow, which is one of the chief difficulties when the space between the ribs is very narrow.

RUPTURE OF ABDOMINAL VISCERA.

Dr. Gibbon reported also 2 cases of rupture of abdominal viscera. The first of these was a rupture of the spleen that occurred in a boy, and was due to a fall from a tree. After this fall there was immediate shock, but the patient recovered and went home. The next day he had a secondary shock and became exceedingly ill. On the day following, when he was seen by Dr. Gibbon, he had all the symptoms of severe abdominal hemorrhage with free blood in the abdominal cavity. It was impossible to determine the source of this hemorrhage; hence, the liver was considered the most likely seat, and an incision was made over this organ. Free blood escaped from the wound, but the liver and the other organs on the right side were found uninjured. An incision was then made on the left side, and a laceration of the spleen was discovered. This was firmly packed with gauze and the abdominal cavity was irrigated. After the wound on the right side had been closed, it was found that the hemorrhage had been controlled by the packing. The latter, therefore, was left in position, and the wound was partly closed. The boy made an uneventful recovery, except for a slight, left-sided pleurisy.

The other case was one of rupture of the liver, and occurred in a girl nine years of age, who had been run over by a wagon. When seen, two hours after the accident, her condition was exceedingly bad. She had shown progressive shock, and there was abdominal rigidity and tenderness. Intraabdominal hemorrhage was thought to be present, and, in the absence of other indications of its seat, an incision was made over the point of tenderness (*i.e.,* below the umbilicus, in the median line). Blood was evacuated through this wound, some clots coming from the right side. The liver was then explored, and a large laceration was found. An incision through the right border of the upper portion of the rectus showed the wound to be situated about three-quarters of an inch external to the gall-bladder. It was about three inches in length, and extended through the entire thickness of the liver. It was packed with iodoform-gauze. The pelvic cavity was then irrigated, a large quantity of blood and clots being evacuated. The laceration of the liver was then found to be still oozing. In attempting to control this condition, a clot was probably loosened, and for a few moments there was exceedingly profuse hemorrhage. This was ultimately controlled by repacking the wound, and by placing large pads beneath the liver and between that organ and the chest-wall. During the operation seven pints of salt-solution were injected intravenously. The child improved somewhat, but died on the third day after the operation, apparently on account of the loss of blood.

In commenting upon these cases, Dr. Gibbon spoke of the treatment of abdominal contusions, and of the difficulty, in the presence of shock and of other severe symptoms, that one finds in determining whether there is any laceration of a viscus. The case of rupture of the spleen illustrates the fact that marked symptoms may be absent for many hours after a severe laceration of one of the abdominal organs. Definite rules cannot be formulated in such cases, but Dr. Gibbon thinks that when there is any evidence of intraabdominal bleeding, operation should be carried out at once. Persistent rigidity and localized pain also indicate exploration. He referred to cases in which there is profound shock without serious lesion, and stated that they usually improve rapidly and may be well before the necessary preparations for operation can be made. Progressive shock he considers to be the strongest of all indications for operation.

BRAIN SHOWING EXTENSIVE HEMORRHAGE INTO BOTH HEMISPHERES.

Dr. Spiller demonstrated the specimen—the brain of a newborn infant. The clinical notes had been obtained by Dr. Hamill. The child had a temperature of 99° to 100° F. during the first three days after its birth. On the fourth day, its temperature rose to 104° F. It was slightly jaundiced and had some diarrhea. A papular eruption on the face and trunk was observed on the eighth day, and the epidermis of the feet and the hands desquamated. On the eleventh day, the child began to show a tendency to retract its head and turn it to the left, and the muscles of the neck became somewhat rigid; it also had one convulsion, which at first was tonic, but later became clonic; the convulsion involving all the limbs. During the next twenty-four hours, four convulsions occurred, and the baby died on the thirteenth day. Dr. Hamill removed the brain, and found a large hemorrhage into the left hemisphere; (3 or 4 ounces of coagulated blood) and a smaller amount of blood in the right hemisphere.

After having shown the specimens, Dr. Spiller discussed the causes of hemorrhage into the brain (traumatic origin) in young children and spoke of a few clinical and pathological cases.

Dr. Hamill said that the reason he had asked Dr. Spiller if he did not consider that the condition might be dependent upon an infectious process was that the infant had had fever; a rash, which was at first papular and then hemorrhagic, and disturbance of the bowels, with greenish mucous stools, symptoms which are rather characteristic of the infections of the newborn. Dr. Hamill had taken cultures from various organs in this case at the postmortem. These had shown a bacillus, probably of the colon group distributed everywhere. The exact nature of this bacillus had not yet been determined.

A CASE OF GLIOMA OF THE BRAIN.

Dr. John H. Jopson and Dr. D. J. McCarthy reported a case of glioma of the brain in a boy of four years. The symptoms were of seven weeks' duration, and began with drowsiness, quickly followed by left-sided hemiplegia, headache, restlessness and night-cries; vomiting and partial incontinence of urine were also present. There was a partial return of power in the leg after two weeks, and consciousness and speech were preserved until shortly before death. Fever and convulsions were absent. The pulse was 55 on the day of admission to the hospital. A few hours later, he became unconscious; the pulse became rapid and weak, the temperature rose, and the symptoms of fatal paralytic compression of the brain were present. The patient was trephined the same night, in the hope that a hemorrhage or a collection of fluid might be evacuated, as there was a history of a fall preceding his illness, but nothing was discovered, and he died shortly afterward.

At autopsy, a gelatinous tumor, with areas of hemorrhagic extravasation, was found to occupy the anterior two-thirds of the right hemisphere. It began immediately beneath the ependyma of the third ventricle, and extended to the external capsule. The anterior third of the internal capsule was infiltrated by the tumor-mass. At no point did the tumor reach within an inch of the cortical surface. Microscopic examination showed a neuroglioma, composed entirely of neuroglear nuclei and fibers. The tumor was of central origin, of an infiltrating character, and inoperable.

The Diagnostic Value of Leukocytosis.—Fernand Bezançon and Marcel Labbé (*Gaz. des Hopitaux,* June 6, 1903) state that polynuclear hyperleukocytosis is the rule in acute suppuration; this fact is of value in the diagnosis of appendicitis and of pelvic suppurations. In a patient suffering from fever with a typhoid state, the demonstration of leukocytosis with polynucleosis would point to some frankly inflammatory process, and exclude typhoid or miliary tuberculosis. Malaria gives a mononuclear hypoleukocytosis. In cachectic conditions, not accompanied by fever, the presence of polynuclear hyperleukocytosis with anemia may lead to a diagnosis of cancer. In the differential diagnosis of ganglionic tuberculosis, lympho sarcoma, and simple lymphadenitis, an examination of the blood is of the greatest value; the last-named affection alone showing a normal number of leukocytes with predominence of mononuclears.—*Medical Record.*

Current Literature.

PATHOLOGY.

Hall, I. Walker, and Brazil, W. H.: Cystadenoma of Aberrant Bile Ducts in a Young Child. (*The Medical Chronicle*, January, 1904, p. 243.)

The patient was a girl, six and one-half years old, who was brought to the hospital because of scarlet fever. There had been no symptoms referable to the liver other than some general enlargement of the abdomen. During the routine examination a tumor was found in the right lumbar region; it was round, not tender, dull on percussion and fluctuating, though very tense.

The child died suddenly, and at necropsy the growth was found to arise from the under surface of the liver. Twenty ounces of thick grumous fluid were evacuated; under the microscope this showed pus cells, cholesterin and Charcot's crystals. No hooklets were to be found. Study of the tumor revealed one large and several small cysts. From the right hepatic duct several small branches appeared to arise and pass into the capsule of the tumor; definite openings into the duct could not be demonstrated, but the tubes presented the characters of small bile ducts, consisting of a thick fibrous coat surrounding a layer of columnar epithelium; the cells of the epithelium stained badly and were evidently in a degenerative condition.

In discussing the origin of the cyst the authors call attention to the fact that the growth described was in a condition of active proliferation and was in relation to a larger type of biliary duct than that from which multilocular cysts and hepatic cystadenomata usually arise.

The presence of pus cells in the cyst cavities and of polynuclear leukocytes in the wall of the tumor indicated some secondary infection which probably lead to the fatal issue.

Dudgeon, Leonard S.: The Etiology, Pathology and Diagnosis of Adrenal Hemorrhage. (*American Journal of the Medical Sciences*, January, 1904, p. 134.)

The writer gives the clinical records and postmortem findings in 4 cases, all occurring in infants or children, the youngest patient being fourteen weeks, and the oldest six years. Arnaud's classification of the cases into (1) the asthenic type; (2) peritoneal; and (3) nervous, is regarded as incomplete; and Dudgeon would add: (4) Cases with a very acute onset and many symptoms of an acute specific fever. (5) Cases with severe skin lesions, purpura, etc., but not suggesting an acute specific fever. (6) Those cases in which the adrenal hemorrhage occurs as a complication of some pre-existing disease, and is recognized only at the autopsy. (7) Hemorrhage in the newborn. The writer discusses the question whether or not group (4) could be considered cases of fulminating smallpox, since most reported cases have occurred in unvaccinated patients; he decides, however, that they are not smallpox.

As to etiology, in most cases (1) the term idiopathic might justly be applied. (2) Gastrointestinal infection. (3) The disease is very common in the newborn. (4) Acute or chronic lung and cardiac disease, or any disease that produces stagnation of the blood or marked increase in blood pressure. (5) Septicemia, pyemia, acute miliary tuberculosis and the toxemia from severe burns. (6) Congenital syphilis. (7) Blows in the back and severe abdominal contusions. (8) The socalled blood diseases, *e.g.*, scurvy, etc. (9) Chronic nervous disease.

As to the morbid anatomy. (1) The whole gland or glands are converted into "blood sacs," with occasional extravasation into the surrounding tissues. (2) A hemorrhage may occupy the medulla of the gland, but the cortex is spared, except for a few red corpuscles scattered between the columns of adrenal cells. (3) Scattered hemorrhages into the gland substance, chiefly in the medulla, with little destruction of the parenchyma.

Many of the cases of sudden death in the course of the diseases mentioned have been found to be associated with hemorrhage into the adrenal gland.

Jackson, W. Fred.: A Case of Prenatal Appendicitis. (*American Journal of the Medical Sciences*, April, 1904, p. 710.)

Forty hours after normal birth by a healthy mother, a well-developed female infant died from poisoning by bichlorid of mercury accidentally administered five hours previous. At the necropsy the appendix was found congested, twisted upon the cecum and bound upon it by numerous firm adhesions. The reduplicated surfaces of the appendix were likewise bound together by adhesions. The small intestine, and the colon below the ileocecal opening showed no evidence of inflammation. From the fact that the adhesions were so firm upon and around the appendix the writer concludes that there had existed before birth an inflammation of the appendix.

Thomas, William: On Congenital Occlusion of the Esophagus. (*Birmingham Medical Review*, February, 1904, p. 83.)

After reporting a case of this comparatively rare condition, the writer mentions that Gibson had described it in 1696. The deformity is probably due to an arrest of development, and the most frequent pathological arrangement is that in which the lower part of the esophagus opens into the trachea, while the upper part of the esophagus ends in a blind pouch.

MEDICINE.

Shuttleworth, G. E.: On Mental Deficiency in Children. (*The British Journal of Children's Diseases*, March, 1904, p. 99.)

Cases of congenital or primary deficiency can be divided into those due to causes acting prior to birth, and those due to causes acting at birth. Among 2,380 children congenitally deficient, there was a phthisical family history in 28.31 per cent.; hereditary mental weakness (insanity, imbecility, etc.) in 21.38 per cent.; epilepsy or other marked neurosis in 20 per cent.; intemperance in parents (alcoholic) in 16.38 per cent.; consanguinity in parents or grandparents in 4.20 per cent. As to causes acting at birth, among the same children there were 3.52 per cent. born prematurely, and 17.55 per cent. difficult births.

The cases of acquired or noncongenital deficiency are not nearly so numerous as parents would like to believe; the illness or shock to which the mental defect is attributed is only an incident, not the original cause in most cases. Causes assigned for these secondary cases are:—Eclampsia (infantile convulsions), 27.39 per cent.; epilepsy (Darenth statistics), 11.52 per cent.; infantile, etc., paralyses, 0.92 per cent.; traumatism (injury to head), 6.17 per cent.; fright or shock (mental), 3.06 per cent.; sunstroke, 0.54 per cent.; feeble illnesses with brain complications (meningitis, atrophy, etc.), 5.96 per cent.; overpressure at school, 0.16 per cent.

It is to be remembered, however, that many children suffer from infantile convulsions with no resulting mental enfeeblement, and probably the majority have falls, even on their heads, which, with a previously sound brain, do not produce traumatic imbecility.

The types of mentally-deficient children are (1) the dull and apathetic, and (2) the nervous and excitable, examples of the two types being the cretin and the epileptic. Characterizing these defectives there may be either congenital abnormalities, such as patulous foramen ovale, various stigmata of degeneration or traces of fetal structures persisting. Microcephaly and hydrocephaly are readily recognized in other cases. The most uniform type of primary amentia, however, is the Mongolian, with short oval skull, flattened posteriorly; oblique palpebral fissures with epicanthic fold; broad hands with stumpy fingers, the little finger sometimes incurved toward the ring-finger. The sporadic cretin or myxedematous idiot is easily picked out because of the dwarfed body, thick, baggy skin, large protruding tongue, fat pads on the neck and chest and the broad, flat nose. Cases of fetal chondrodystrophy might be mistaken for cretins; but the former, though dwarfed, are usually very intelligent.

Amaurotic family idiocy and the eclamptic cases occupy a borderland between the congenital and the acquired deficiencies. The epileptic cases are most apt to develop at the second dentition or at puberty.

As regards prognosis the writer quotes Dr. Langdon Down that it is hopeful, "contrary to what is so often thought, inversely as the child is comely, fair to look upon, and winsome."

Though the teaching of mentally-deficient children must be largely individual, social good qualities are best promoted by instruction with other similar children, and by teachers outside the patients' homes.

Stewart, William: A Case of Hemorrhagic Pericarditis Associated with the Presence of Bacillus Coli Communis; Paracentesis; Recovery. (*Edinburgh Medical Journal,* February, 1904, p. 158.)

On the seventh day after onset of pleuropneumonia the patient, a girl ten years old, was seized with dyspnea and pain over the precordia. The cardiac dullness increased so as to extend one and one-half inches to the right of the sternum and well down into the fifth interspace, merging with the liver dullness. On the eighth day the pericardial friction rub had disappeared and the following day there was bulging of the interspaces and edema over the precordia. Under strict antiseptic conditions 5 ounces of blood stained fluid were withdrawn from the pericardium by means of a trocar and canula inserted in the fourth interspace one and three-quarter inches from the left margin of the sternum. The fluid resembled blood and by culture was found to contain a pure growth of bacillus coli communis.

After the paracentesis the cardiac dullness diminished to nearly normal area and the friction murmur returned. In five days the pericardial friction disappeared, being replaced by a loud systolic mitral murmur. Six weeks after the beginning of the attack the girl was well enough to leave the hospital.

SURGERY.

Corner, Edred M.: On the Pathology and Classification of Intussusceptions, with a Résumé of Those Arising from the Appendix Ceci. (*Annals of Surgery*, November, 1903, p. 690.)

After a consideration of the varieties of intussusception collected by Treves, and those reported from the St. Thomas' and St. Bartholomew's Hospitals, the writer gives his own experiences. He found double invagination present in about 80 per cent. of his cases, and only one instance of ileocecal intussusception—even this one doubtful. He explains the frequent failure of reduction by inflation as due to the invaginated ileum being caught in the jaws of the ileocecal valve where the greater the pressure from below, the more difficult the return of the intestine to its normal relation.

A summary of the first portion of the article suggests that (1) Double intussusceptions are more common than single. (2) Ileocolic intussusceptions are the most common of all; enteric-ileocecal or colic-ileocecal next. (3) The single ileocecal variety is decidedly uncommon and found principally or nearly entirely in chronic cases. (4) The ileocolic is the most common variety of primary intussusception. (5) The inversion begins laterally and most frequently in the last part of the ileum, which becomes engaged in the jaws of the ileocecal valve. (6) The socalled ileocecal forms probably arose in the last half inch of the ileum or caput coli. (7) The evolution of the enteric invagination at the ileocecal valve constitutes the chief difficulty in the reduction of the last part of the invagination, frequently rendering traction necessary. (8) That both in man and animals the ileocecal valve is practically never primarily responsible for the trouble.

HYGIENE AND THERAPEUTICS.

Allport, Wilfrid: Ophthalmia Neonatorum. (*Birmingham Medical Review*, December, 1903, p. 767.)

In 80 per cent. of the cases the mothers are primiparous and of these cases the majority are males; the explanation is that there is greater delay of the head in the vagina where infection takes place. The gonococcus penetrates the conjunctiva, reaching after some days the superficial layer of subepithelial tissue, a point to be remembered in treatment. Symptoms usually appear on the third day; after redness, swelling and discharge, the lids of both eyes become tense protruding tumors and there is a continuous stream of pus from the slit between them.

As a prophylactic measure the writer now uses argyrol in 20 per cent. solution, considering it absolutely non-irritating and just as efficacious as nitrate of silver. When infection has already occurred, the treatment found most satisfactory is as follows:—

At least once a day, and if possible twice daily, in the early stages the doctor should personally attend to the eyes, and he must have a nurse or some other person to assist him. The baby's arms are fixed by a towel pinned around the body, and the nurse supports with one hand the child's head, while the other is free for any manipulation of the lids which may be necessary. The lids are retracted by wire specula, the doctor holding one and the nurse the other, and a gentle current of warm 1 to 1,000 permanganate of potash solution is allowed to flow into each eye through a glass nozzle connected with a syphon douche. A great deal of the success of the treatment depends on the quantity of lotion used, and at least a pint of the liquid for each eye is required.

As the cornea is the seat of greatest danger in this disease, great caution should be used in all manipulations. Special care must be taken that the cornea is not touched by the specula or by the nozzle of the douche, as the slightest abrasion of its surface may allow the microorganisms to enter, and so produce a corneal ulcer.

After a thorough douching of the eyes, the conjunctiva of the lids should be well painted with a 50 per cent. solution of argyrol, and the excess wiped away with a swab. If silver nitrate is used great care must be taken that the solution is not allowed to run on to the cornea, and the excess should be immediately neutralized by a solution of sodium chlorid. After the lids have been brushed a drop of ½ per cent. solution of atropin is instilled into the eyes, as a precaution against a possible secondary iritis and also to put the eye at rest. The nurse should be instructed to bathe the eyes every hour during the day with the permanganate lotion, and then to drop a solution of 20 per cent. argyrol into each eye. The frequency of these applications may, of course, be diminished as the inflammation subsides. One point in connection with these cases should always be strongly insisted upon, and that is that every person employed in attending the child's eyes should always wear protecting glasses when so doing, to prevent any of the pus from spurting up into the operator's eyes. In some cases, where the chemosis is intense, the outer canthus should be divided, so as to prevent the pressure of the lids on the eye from causing a corneal lesion. Careful treatment will in nearly every case be followed by a successful issue.

Shaw, H. L. K.: Starch Digestion in Infancy. (*Albany Medical Annals*, January, 1904, p. 148.)

Infants from sixteen days to two months old were the subjects of one hundred tests, partly for the presence of diastatic ferment in the stomach, and partly for the presence of ptyalin in the saliva. From the results of the experiments the author concludes:—

(1) That the saliva of very young infants contains a diastatic enzyme capable of converting small amounts of starch into maltose.

(2) That the diastatic action of the saliva may continue in the stomach as long as two hours after feeding.

(3) That, on physiological grounds, there is no reason why infants cannot digest small amounts of starch.

Price, J. Woods, and L'Engle, Edward M.: A Fatal Case of Poisoning with Oil of Gaultheria. (*American Journal of the Medical Sciences*, February, 1904, p. 265.)

A female child, two years old, swallowed some commercial oil of wintergreen, the amount being estimated at one dram. After vomiting several times the child was brought to the hospital where the temperature was found to be normal, pulse 100 and respirations 26, both regular. After lavage there were no symptoms for two hours when there was great thirst and the pulse rose to 150; in another hour the face was flushed, the breathing labored and irregular; the hearing was impaired and there were hallucinations of vision. Next there were delirium and slight twitchings of the hands and the neck muscles; diarrhea came on, the stools having a strong odor of oil of gaultheria.

Seven hours after taking the drug the child had a general convulsion which was frequently repeated; the pulse was of fair volume but the respirations were deep, labored and decreased to four or five per minute. The child died of respiratory failure ten hours after swallowing the oil of wintergreen. The authors quote von Rottenbiller as believing that the poisonous effects are due to impurities in the preparations, rather than to the oil of gaultheria itself.

Ker, Claude B.: The Open-Air Treatment of Bronchopneumonia Complicating Whooping-Cough. (*Scottish Medical and Surgical Journal,* January, 1904, p. 33.)

The death rate in the Edinburgh City Hospital from whooping-cough, for the eight years ending in 1900, was 18.1 per cent.; the principal cause of death was the complicating bronchopneumonia. Of the cases of bronchopneumonia complicating whooping-cough 71 per cent., or more than two out of three, died.

In the effort to reduce the mortality, trial was made of all the most vaunted remedies for whooping-cough. The writer condemns most of the usual nerve sedatives as being depressent, and thinks the same of creosote or eucalyptus inhalations. Belladonna was thought to be of service. For the bronchopneumonia, however, the treatment found most efficacious was to keep the children in the open air, having the cots uncovered, but in a sheltered position on the lawn for six hours daily, provided there was no rain. At night, on rainy days and in winter the patients were kept in a large airy ward with the windows open. The cases selected for trial were those regarded as hopeless. The main contraindication of the open air treatment was laryngitis.

The good effects noted were increase of appetite and general strength, less irritability and less cyanosis. The death rate of the bronchopneumonia cases instead of remaining at two out of three, was reduced to one out of three, that is, the mortality was diminished to just one-half what it had been under the indoor treatment.

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THE INFLUENCE OF AMERICAN PEDIATRIC SOCIETIES IN PROMOTING THE WELFARE OF AMERICAN CHILDREN.

PRESIDENTIAL ADDRESS DELIVERED AT THE SIXTEENTH ANNUAL
MEETING OF THE AMERICAN PEDIATRIC SOCIETY,
DETROIT, MICH., MAY 31, 1904.

BY AUGUSTUS CAILLÉ, M. D.,
New York.

GENTLEMEN: First, let me express my gratitude for your kindness in conferring upon me the honor of the presidency of the American Pediatric Society.

According to Article I. of the constitution and by-laws, the American Pediatric Society has for its object the advancement of the physiology, pathology and therapeutics of infancy and childhood.

On various occasions my predecessors in office have interestingly reviewed the past work of the Society, and have pointed out to what extent our labors have been recognized by the profession at large.

It seems to me that after fifteen years of prosperous existence the time has arrived when the weight and authority of our Society, in addition to being felt by our professional colleagues, should be made to extend to the millions of homes throughout the land. In other words, the American Pediatric Society should now be ready to assume broader obligations and to grapple with larger problems. To shape and promote the public understanding regarding sanitation of the child's environment, and to supervise from a medical standpoint the education of American children should be one of the chief aims of the American Pediatric Society.

The life of the child runs its course in the home, the school, the playground, and, unfortunately, in the workshop; and the myriad of problems that confront us as guardians of the child may, after all, be condensed into one grand effort, namely, that of sanitation. I, therefore, beg to be permitted to point out, briefly, some of the more important matters to which we as a body may direct our attention.

THE OVERHEATING OF AMERICAN HOMES AND THE FEAR OF CATCHING COLD.

The overheating of living rooms and sleeping rooms in homes and temporary homes, such as boarding schools, is one of the most fruitful causes of ill-health in children. The fear of breathing fresh air still holds possession of the multitude, as it did in former times, when microbial infection was a terra incognita; and the comparative few who have dared to advocate the breathing of cool, fresh air are looked upon as little short of dangerous advisers by the wiseacres of the domestic hearth.

A "cold," although an every-day occurrence, has, like the Monroe Doctrine or the Immortality of the Soul, not as yet received a satisfactory explanation. Areas of minor resistance or irregularities of capillary circulation are inherent or brought on in various individuals. If cold feet produce catarrh of the upper air passages, or if a hair-cut is followed by a stiff neck or sore throat, such an irritation is probably reflected or transmitted to an area of minor resistance, and the resulting local hyperemia favors infection or the invasion of such microbes as happen to be present, though latent. In this manner we probably contract colds of the upper air passages, which, according to localization, are called rhinitis, pharyngitis, laryngitis and bronchitis. *The susceptibility to cold-catching can be markedly reduced by a judicious hardening process in connection with proper alimentation.* To use a cold bath or a cold douche for hardening nurslings is probably deleterious; but in older children a hardening process by cold douching is undoubtedly beneficial, and will strengthen the child's forces and permit it to overcome inclement influences of various kinds. The susceptibility to cold-catching cannot be reduced, however, in homes in which overheating of the living apartments is tolerated. Under such unfavorable conditions, infants and older children are seldom free from catarrhal conditions of the respiratory organs, and many of the socalled difficult feeding cases, acute and subacute indigestion, resist management and drag on from bad to worse for the same reason, and improve as soon as the children are taken out of doors. In this connection it may be well to state that one of the most dangerous methods of heating a room is the portable gas stove not connected with a flue. The products of combustion remain in the room and vitiate the air to such an extent that adults and older children suffer from general malaise, and infants suffer seriously from various forms of ill-defined sickness.

Overheating and faulty heating of living apartments should be condemned by the medical profession at every opportunity which may present itself, and fresh-air treatment of healthy and sick children should be insisted upon. In this respect Boston is setting a good example of late, inasmuch as some of the wealthy and aristocratic families of the Back Bay district are putting their babies to sleep out of doors, on roofs, balconies and wide window-sills. The method is begun when the baby is about two months old, and is continued until the child is five or six years old. The infant is wrapped up like a pappoose and is laid on a hair mattress in a box or basket, and so strapped that the arms and legs have full freedom. The child is warmly covered with blankets and above the bed is an awning shielding it from wind and direct sun rays. It is stated that during the last winter, notwithstanding the severity of the weather, there were but few days when the babies were not placed out of doors.

DISINFECTION AND THE SANITARY CODE.

In case of contagious disease, physicians are required to make a report; and on the report of a case, a health inspector endeavors to trace the origin of the disease, provides disinfectants, and reports the case at school. The disinfection of living apartments, with filthy carpets and hangings, cracked and papered walls, soiled upholstered furniture, and the thousand and one odds and ends, is an illusion, as practised in our large cities. The removal of a convalescent child to another room or to a neighboring apartment during the fumigation process, which takes ten to twelve hours, theoretically and practically nullifies all efforts to destroy sources of infection or to stamp out contagious disease. The compulsory cleansing of an apartment with soap and water, as practised in some of the larger cities of Europe, has more real value than fumigation with sulphur. One of the principal means of the spread of contagious disease is overlooked and may be found in the cloakrooms of factories and schools, in which the wraps and outer garments, often wet and damp, of the adults and children are heaped together. The same may be said of books in schools and libraries. They are frequently soiled with the nasal discharge of the sick, and as yet a practical and thorough method of disinfection has not been elaborated.

The practice of compelling parents to keep children convalescent from diphtheria indoors and confined to the sickroom, until all bacilli have disappeared from the throat, is in my opinion unreasonable, because it deprives the convalescents of the tonic effects of fresh air which they require, and because the infectious nature of diphtheria bacilli found during convalescence and later on *has not been proven.*

Professor Dunbar, the Director of the Hamburg Hygienic Institute, recently informed me that school children are permitted to re-enter the schools in Hamburg very soon after the clinical symptoms of a diphtheritic infection had subsided, and that no notice is taken of the presence or absence of diphtheria bacilli in such cases, because careful investigation of such factors in schools and asylums had shown that the so-called bacillary precautions have not been followed by noteworthy results.

One of the most cruel results of the Sanitary Code as practised in some of our large cities is the taking away of children suffering from ordinary every-day eruptive fevers and transferring them to a suburban department hospital, against the will of the parents, when such cases are reported from a hospital or from an apartment, some portion of which is utilized for business purposes.

This enactment is directed chiefly against the poor, and has given rise to so much bitterness of feeling that in very many instances the fear of the compulsory removal of a child to a department hospital has prevented parents from calling in a physician and has kept well-meaning and humane physicians from reporting such cases.

It must be conceded that in many instances it would be to the interest of all concerned, if cases of communicable disease could be treated in a proper hospital; but to compel parents to give up their children in ordinary cases of illness is wrong. It is far better to take no stringent precaution than to cast discredit upon sanitation in general, by enforcing cruel and unnecessary laws. If the community demands isolation under all circumstances, the authorities should insist upon securing proper accommodations for mother and child. A free discussion and criticism of the Sanitary Code as interpreted by some of our Health Boards would appear opportune.

SCHOOL HYGIENE AND SCHOOL INSPECTION.

Medical school inspection has been systematically carried out in France and Germany for half a century. It is a public question and merits the constant attention of medical and especially pediatric societies. Daily medical inspection of the schools of the city of New York received its first practical agitation in 1890, at a public meeting of the Pediatric Section of the New York Academy of Medicine, under the Chairmanship of the writer. It was successfully inaugurated in Boston in 1894, in New York in 1897, in Philadelphia in 1898, and, subsequently, in many other large centres throughout our country. The inspection is made during the early school hours, and children found to be ill are sent home with a card informing the parents that their child needs medical treatment.

School inspection had primarily for its object the early detection of communicable disease, but in its logical development it now embraces, or should embrace, in its broadest sense, the hygienic guardianship of school children. It is of far-reaching importance as regards the welfare of the masses from a hygienic and economic standpoint, because it is a powerful factor in educating children and parents. In order fully to appreciate the far-reaching beneficial effects of school inspection, we need only to look over what has been accomplished within the few years that it has existed in our country.

A rational school inspection reveals unsanitary conditions in general, existing in schools, day nurseries and kindergartens; it is a powerful factor in promoting the cleanliness of the scholars, and insures proper attention to existing parasites, skin lesions and obnoxious habits. Early detection of measles, scarlet fever, chicken-pox, whooping-cough, diphtheria, tuberculosis, contagious ophthalmia and other communicable disease is one of the features of school inspection. Mouth-breathers are detected at a glance and children suffering from adenoids, enlarged tonsils or other nasal obstruction are thus put into the way of receiving the benefits of proper treatment.

Backward and neurotic children, anemic children, with simple loss of appetite, or those suffering from headache, chorea, neurasthenia, eye strain from visual defects, or partial deafness, are singled out readily.

There are certain diseases brought about by faulty positions in sitting, writing, study and standing. For instance, cramped position causes round shoulders, scoliosis, flat chest, myopia, etc. It is estimated that fully 90 per cent. of curvature, not due to bone disease, is developed during school life from this cause alone.

The early detection of vaginal discharges of gonorrheal origin in young children in day nurseries, kindergartens and primary classes in public schools is of the utmost importance in preventing the spread of this malady and its complications, such as contagious ophthalmia, etc.

To illustrate the dangers of gonorrheal infection in children in public schools, the following authentic instance is cited: In a public institution in New York City harboring 850 children, 130 cases of socalled leucorrhea developed in two months, which proved to be gonorrheal in nature. A large number of these children attended public schools. After numerous complaints by parents of children subsequently infected had been made, the matter was carefully investigated and proper isolation was effected.

When medical inspection is combined with rational elementary instruction in hygiene, as inaugurated in the state of Michigan, the best chances are offered for lessening sickness in school children, because teacher, parents, family physician and inspectors cooperate.

SCHOOL FATIGUE AND BACKWARD CHILDREN.

In 1900, 16,000,000 children were enrolled in the common schools of our country. "These children are supposed to acquire knowledge and physical health." "The aim of an education must be the development of the fullest and soundest mental, moral and physical life of which the particular individual is capable," but a gain in knowledge at the expense of physical health is a loss. The opportunity for acquiring knowledge is the same for all school children, but not all children have the same capacity.

Many well founded complaints have been made of over-pressure in primary schools, and of undue pressure on backward scholars by keeping them in after school; by long home lessons, or by an injudicious use of emulation. The relative endurance of the sexes varies; girls do not gain much after puberty, as boys do, and about one girl in twenty is obliged to give up her school life on account of ill-health.

The present-day native American girl of the middle class is the artificial product of advanced civilization. She is a bundle of nerves encased in a fragile frame. A prominent gynecologist has aptly said: "The American horse receives, on the average, better treatment than the young woman of America from the time of early girlhood until the age of development has passed. The stock breeder never forces the young animal during the period of development, realizing that it is the time when the greatest care should be taken; while American parents, especially of the middle classes, with great ambition for their children, and the desire that they develop intellectually beyond their own standard, allow their heads to be crammed with knowledge so rapidly that the brain cannot assimilate it, and the result is that all strength of development is devoted to the brain, and physique finds expansion as best it can. New England furnishes the extreme type of the woman, supposedly more perfect than in any other section; intellectually above the average, but with a physique below par, with greatly reduced reproductive powers—all due to the forcing of study at the age of development."

Our school curriculum, as arranged by the average up-to-date pedagogue, is inclined to take cognizance of the socalled bright children endowed with a quick reaction time; but frequently the slow ones eventually show the greater mental strength and endurance and become the more intellectual and successful men and women. "The bright ones are like hothouse plants" and fall short of real maturity.

The days of brutally whipping children in school are gone; we are now refined and whip their brains to death. A correspondent of the *Lancet* wrote, in 1884: "If more evidence is necessary to prove the exhausting influence of school life, it would be obtained by a study of the group of head masters of our public schools. When they met at Wellington College in conference, I saw them photographed in group in front of the college, their faces

'Sicklied o'er with the pale cast of thought.'

Of some sixty masters I could pick out only three who looked ordinarily healthy." The same sad faces can be seen in the group pictures of the graduating classes of any public school in our cities.

In view of these facts the pediatrist may well call a halt and demand for our children less brain gymnastics and more fresh air and exercise. It is practicable to classify the children seen in a school by means of facts to be obtained from the teachers' reports and from medical inspection. About 20 per cent. of school children are found to be backward, solely as a result of some defect of the special senses; dullness due to eye defect or to defect in hearing. Another group is made up of neurotic children with low nutrition and mental dullness.

Backward children should have separate classrooms and special care, that they may develop to their maximum, and also that they may not be a hindrance and source of discouragement to other and more precocious children; but the greatest obstacle to such a change would be the unwillingness of parents to admit that their children were backward or mentally deficient. Children with marked mental and physical abnormalities, developmental defects or stigmata should be segregated for special training.

The education of the feeble-minded lies essentially along the line of the development of the senses, which are not up to the normal standard. England, Germany and Belgium have each solved the difficulty in part by establishing special auxiliary classes, ungraded schools, where sub-normal children receive what is really private instruction based upon their individual needs. In our country about 6 per cent. are now cared for in special institutions, according to figures furnished by Dr. Louise F. Bryson. There are at present only sixteen states in the Union that provide custodial care for them. New York has two institutions; so has New Jersey. The other fourteen states that are up to date in this matter are California, Washington, Nebraska, Iowa, Kansas, Illinois, Minnesota, Ohio, Indiana, Kentucky, Maryland, Pennsylvania, Connecticut and Massachusetts. In Providence and Boston there are special schools for sub-normal children connected with the regular public school system. One of the duties of the physician, teacher and statesman is to find out the place of the feeble-minded. They have the same right to an education which will fit them for a sphere of usefulness that the blind have. The Widener Memorial Industrial Training School for Crippled Children is also a splendid example of a well directed humane charity.

Although dull and deficient children are better detected by the teacher than by the physician, the classification of backward children, as to the intrinsic cause of the backwardness, and, eventually, the suggestion and application of the remedy for this backwardness, must be left to the physician.

BODILY TRAINING OF PUPILS AND SCHOOL BATHS.

The physician has a part in the encouragement of bodily training of pupils and of playground extension. "Inhibition, to sit still and hold muscular movements in check, is one of the first lessons of school life. Unnatural order should be dispensed with, and the children allowed all the physical activity compatible with the best results."

Playgrounds for Children.—Tsanoff, the secretary of the Culture Extension League, says: "The playgounds stimulate and guide life in a way that nothing else can do. Their relation to the development of character is very similar to that which the school bears toward the development of mind. In fact, the collective play of the children has a greater influence in forming habits of personal and social conduct of life than has school or even home instruction and advice. Many practical questions, for the solution of which we have been looking to the school, the home or the church, will be found belonging to the playground to solve. The time is coming when the playgrounds will be as seriously considered as the schools are to-day."

School Baths.—An important step was made by the Mayor of Göttingen, Germany, when he established shower or rain baths in connection with a large public school. A similar bath was established later in Weimar. Reports show that although very few children were at first disposed to take these warm shower baths, there were 200, or 75 per cent. of the whole number, visiting them daily after two months. The bathing is done during school hours, by a well arranged plan of relays, which does not interfere with instruction. "The provision for baths is of the greatest importance. It provides an opportunity for very poor children to enjoy the wholesome luxury of a bath, when otherwise they would not have one; besides, it is educational. The lesson of personal cleanliness is one of the fundamental principles in education."

The shower bath is the best and most sanitary for public bathing places, and probably of more importance to the community than public libraries.

An interesting and important question has been raised by the "Child-Labor Committee," which is best submitted by reproducing a letter recently received:

"My Dear Sir:

"The present child-labor law provides that before beginning work a child must not only be fourteen years of age, but must have acquired a certain minimum of education, which is about that of the normal twelve-year-old. This provision is being very carefully enforced in this city, and complaint has arisen against it in several quarters. It has been claimed that the law should provide rather that fourteen-year-olds who are deficient in schooling should be obliged to attend evening school.

"It is the belief of members of our committee that such a a provision would be a very unfortunate substitute, and we should very much value your opinion upon this point. Do you consider that fourteen-year-old children who are employed in factories nine hours a day can, without physical injury, attend school in the evening two hours longer? Is there any difference between boys and girls in this regard?

"Trusting that you may be willing to help our committee in preventing the amendment of the existing law, if the amendment indicated above seems to you unwise, I beg leave to remain,

"Yours very truly,

(Signed) "FRED S. HALL, *Secretary.*"

My reply was that, in my opinion, factory boys in good health might safely go to night school and thus escape to some extent the "loaferism" of the street. The factory girl should not as a rule be compelled to attend night school after nine hours' work.

INFANTS' AND CHILDREN'S HOSPITALS.

Medical opinion should discountenance the erection of large institutions in the city to be filled with chronic cases and minor ailments. City hospitals for children in particular are adapted only for acute cases of illness of a severe type. Country and seashore sanitaria and floating hospitals are for the chronic cases. Hospitalism is a complex condition culminating in what is technically known as house infection. The latter is not confined to hospitals, but is a well-known phenomenon as observed in school dormitories, asylums, overcrowded and overheated private homes, lumber camps, soldiers' barracks, etc.

It has been observed by those in charge of children's hospitals everywhere that young babies, after convalescing from acute illness, will eventually, as a result of hospital life and surroundings, lose color, appetite and weight. We should therefore make it a rule to send children home as soon as their condition will permit, and particularly is this necessary when we suspect in a child a feeble resistance to infection by reason of prolonged malnutrition, in the socalled difficult feeding cases. Our regulations for fighting house infection in the Babies' Ward of the New York Post-Graduate Hospital are as follows:

(1) Strict cleanliness of premises and inmates. (2) Thorough ventilation. (3) Sufficient air space. (4) No overheating of wards. (5) Infants are not to be fed by the same hand that attends to the toilet. (6) Soiled linen is to be immediately removed and disinfected. (7) Feeble children are toned up by a change of air (trip to Staten Island, omnibus ride through the Park and sojourn in the Sunbeam playroom and roof garden).

By adopting such precautions we believe that we have been very successful in preventing disease and in lowering our mortality.

EDUCATIONAL FEATURES IN PEDIATRICS.

Pediatrics is a department of general medicine, not a specialty; but special teaching in diseases peculiar to infancy and childhood is a necessity. Undergraduate teaching may be carried out by means of didactic lectures and hospital bedside instruction. Post-graduate teaching should be systematized on a strictly clinical basis; and physical diagnosis, laboratory work, dieto-therapy and hydrotherapy made a prominent feature in a course of pediatrics. All children's hospitals should be equipped as places for research and as teaching hospitals for undergraduates, post-graduates and nurses. Clinic rooms should be in direct connection with the out-patient department of hospitals, and matriculates should have the privilege of visiting dispensary patients in their homes.

In giving clinical instruction in pediatrics during the past fifteen years, I have adopted the following plan: The first forty minutes of the clinic hour are devoted to a more or less rapid demonstration of ten to fifteen sick children, who are placed on tables accessible to the matriculates, the balance of the hour being taken up by a discussion of the principles of treatment of important groups of diseases, such as pneumonia, eruptive fever, convulsions, difficult feeding cases, etc.; or a demonstration is given of stomach washing, bowel irrigation, spinal puncture, intubation, tracheotomy and other subjects. For facilitating direct bedside instruction I make use of a clinical instruction chart which was presented to the American Pediatric Society at a former meeting.

Conclusion.—I have dwelt but briefly upon the more important problems to be solved in matters of home, school and hospital hygiene. Other problems will come and go with time.

Pediatric societies should be the guardians of our children in all sanitary questions. They should be organized for the purpose of promoting the public understanding along these lines, and it is entirely within their province to offer suggestions to school and health boards on matters of sanitation.

In order to broaden the aim and scope of our Society work, the programme of the annual meeting should be so altered and systematized as to suit or reflect the object of the Society.

Heretofore the clinical and laboratory experience of our members, with an occasional collective investigation, has been the order of business. It would seem feasible that our Annual Transactions might contain a running record of the world's progress in Pediatrics by presenting at each meeting a critical review of the world's progress during the year, on the following subjects:

Critical Review of the Year's Progress in (1) Home, School and Hospital Hygiene and Prophylaxis. (2) Diagnosis: Bacteriological, chemical and regional. (3) General Therapeutics, including nutrition, diet and hydrotherapy, photo-therapy, electrotherapy and mechano-therapy. (4) Surgical Therapeutics; Orthopedics.

Clinical contributions and original articles by the members could be grouped around these standards and would make up the balance of the programme. At each annual meeting, the council could designate the members who would be expected to furnish the critical review of progress for the next annual meeting, giving them a full year's time in which to collect material. In this manner our Transactions would contain a running record of the world's progress in the special department of medicine in which we labor.

I am also greatly in favor of prearranged discussions. We have often amused ourselves with uncertainties and called it discussion. In a scientific body, discussion should be the result of mature inquiry and express a clear statement. Writers of papers should be requested to furnish a brief synopsis of their communication to the members, who will then have time to formulate and arrange what they wish to say, and not weary the Society by digressive talk. We cannot afford to waste time, "for time is the stuff that life is made of."

But with all our shortcomings we have accomplished a great deal in the past fifteen years, and I am proud to be associated with men of national and international reputation. We have work behind us and more work before us. Let our philosophy be that of Shakespeare's Hamlet, who says:

"For some must watch,
While some must sleep;
So runs the world away."

Splenomegaly in Children.—Carpenter's (*Brit. Med. Jour.*, August 29, 1903) article is based upon the observation of 348 cases of enlargement of the spleen in infants and young children. The condition is very frequent during the first six months of life, at the end of the first year, and at the end of the second year. Splenic enlargements in children up to six months of age occur in about 40 per cent. of indisputable syphilitic infants. Craniotabes and chronic snuffles are often the only indications of a syphilitic taint. Many cases of splenomegaly are associated with rickets. But many cases of advanced rickets are free from splenic enlargement, and it is absent in the great majority of rickety children. Children with splenomegaly are often not obviously anemic. Petechiæ and bruises are common in very severe cases and often herald a fatal termination. The liver is enlarged in the majority of cases. The prognosis depends upon the condition of the blood. A great reduction in hemoglobin and red cells is not hopeful. Leukocytosis, if considerable, is unpromising. Such children are apt to succumb to bronchopneumonia at any time. Treatment should be preventive, the provision of proper food and a hygienic environment. Rickets and syphilis require appropriate treatment. —*New York and Philadelphia Medical Journal.*

A CASE OF INTUSSUSCEPTION WITH CURE BY SLOUGHING.*

SUB-ACUTE INTUSSUSCEPTION IN A BABY OF SEVEN MONTHS, WITH ILLNESS OF SIXTEEN DAYS, THE SYMPTOMS SIMULATING ILEOCOLITIS; ON THE SIXTEENTH DAY PROTRUSION OF GANGRENOUS INTESTINE FROM THE ANUS; REMOVAL OF SIX INCHES OF NECROTIC BOWEL PROTRUDING BEYOND THE SPHINCTER ANI; RECOVERY.

BY IRVING M. SNOW, M.D.,
Buffalo, N. Y.

Baby Charles M., seven months; weight, sixteen pounds; nursed well until March 10, 1904, when the child grew pale, had a sub-normal temperature and vomited frequently for three days. On March 13th, the vomiting ceased and the patient began to have a slight fever—100° F. to 102° F. and from fifteen to twenty scanty dysenteric stools a day; the stools were passed with tenesmus, were greenish in color and often contained blood; the urine was scanty and high colored; the patient continually lost weight. The family physician treated the case by intestinal irrigations, and on March 25th was able to introduce a soft catheter some distance into the colon.

I saw the child at 9:15 A.M., March 26th. The baby was thin; temperature 100° F., heart rapid and feeble; the abdomen was distended and tympanitic; no abdominal tumor or tenderness discovered by palpation. During the examination the baby passed gas and a stool containing mucus and fecal matter, followed by the protrusion from the anus of a mass, looking like ragged membrane; its color was pale, like anemic mucous membrane, the edges were fringed. The tumor measured 1½ inches long and ¾ inches wide, and could not be replaced by moderate pressure. A rectal examination showed that the mass traversed the rectum and emerged from the sigmoid flexure; no bleeding followed the introduction of the finger. The nurse said the bowel had come down in the night, and that she had pushed it back, thinking it to be a prolapsed rectum. The protruding tissue was evidently necrotic intestine, the result of an intussusception.

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* Read at the Sixteenth Annual Meeting of the American Pediatric Society, Detroit, Mich., May 30, 1904.

The baby was taken to the Sisters' Hospital, and placed under the care of Dr. Eugene Smith. The baby arrived in poor condition, with a pulse of 200. The bowel had receded, and could not be discovered by a rectal examination. It was clear that the child's symptoms, vomiting, diarrhea and emaciation for the past sixteen days were due to a subacute intussusception, that a portion of the bowel had become gangrenous and had twice protruded from the anus. It was also certain that at no time had a complete obstruction to the fecal current existed; for gas and feces had been passed every day since the beginning of the illness. The baby was in poor condition for a laparotomy, and there was no urgent indication for operative treatment. The baby was fed and well stimulated.

On March 27th, the patient was much improved and the bowel again protruded from the anus. Dr. Smith pulled down the necrotic gut outside the sphincter, ligated it distal to living tissue to avoid hemorrhage, cut below the ligature and pushed back the stump into the rectum. The portion of intestine removed was about 6 inches long. The ligature in no way interfered with the fecal current, as the intussusceptum had evidently sloughed partly off at the neck, and the intestinal contents passed through an aperture in the invagination alongside the intussusceptum.

The baby was allowed to nurse and steadily improved, although it had a diarrhea for a number of days. The ligated stump and the remainder of the gangrenous cylinder were not discovered; they either remained in the intestine or were passed unnoticed in the stools. The patient is now in perfect health—ninety-six days after the removal of the necrosed-tissue.

The malady simulated an ileocolitis for sixteen days and without a digital rectal examination and on close scrutiny the protruding mass might have been mistaken for a prolapse of rectal mucosa. When on the sixteenth day the nature of the condition became apparent, a laparotomy would have done no good, and the shock of the operation might have killed the child. The removal of the necrotic intestine March 27th had undoubtedly the effect of shortening the baby's illness and probably saving its life. To await its spontaneous detachment, would be to allow a source of irritation and autointoxication to remain in the intestinal canal to produce pain, abnormal peristalsis, impaired assimilation and increasing prostration. Dr. Herbert Williams, who examined the intestinal slough, was unable to tell whether the specimen was large or small intestine, or whether the exterior was serosa or mucosa, so extensive was the necrosis. This method of cure of an intussusception in a baby a year old or younger, viz., elimination and discharge of the intussusceptum by sloughing or gangrene is excessively rare, and I can find only 4 other recorded cases. To wait for it or expect it involves almost certain death to the patient. Most infantile intussusceptions run an acute course, produce a complete intestinal obstruction and extreme cardiac depression, and terminate fatally unless relieved by operative treatment. The acuity of the symptoms are proportional to the degree of strangulation.

In the rare cases of subacute or chronic intestinal invagination in babies, the lumen of the bowel, although varying in calibre with congestion, is generally sufficiently large for the passage of the intestinal contents, and no symptoms of obstruction are observed. The irritation and congestion cause a plastic inflammation of the serous surfaces in apposition, and adhesions form, rendering a reduction impossible. As to a spontaneous cure by sloughing of the invaginated gut, it is only possible when the continuity of the canal is restored by firm unyielding adhesions before the proximal end of the intussusceptum becomes gangrenous, or if the line of demarcation is below the neck. Gangrene and detachment of the sequestrum are often announced by rapid heart failure, and numerous stools having an excessive fetid gangrenous odor.

Gangrene may commence:—(1) At the point of constriction, the neck of the invagination, in which case, the intestinal sequestrum has a more or less tubular form, either the mucosa or the serosa being turned outside. (2) At the free end of the intussusceptum or at a more or less distant spot from the neck. In this case the necrotic gut is discharged piece-meal, bit by bit, leaving behind an attached remnant floating in the lumen of the gut.

Leichtenstern[1] states that cure by sloughing, if the invagination be in the small intestine, takes place in 10 to 21 days; if in the colon in about 4 weeks, with wide extremes from 3 days to 6 months. In 5 cases under one year old the average time was 9 days. Henoch's case 3 days; Beeston's 4 days; Steinmeyer 7 days; Cripps' 4 days; Snow 17 days; 3 were acute and 2 subacute. Wiggins states that in one instance, age not given, the bowel became gangrenous in twenty-eight hours after invagination. All authors agree that sloughing is most common in acute cases. After necrosis and expulsion of the gut, the health is not immediately established, there follows long continued disturbance of the intestinal functions damaging assimilation, viz., colic, diarrhea, constipation, dyspepsia, vomiting, marasmus, stricture at the scar, perforation, separation of the upper and lower segments of intestine, imperfectly united at the point of sloughing.

A modern physician dealing with an intussusception looks on operative treatment as inevitable, yet in reviewing the literature, it is surprising to learn how often nature if left to herself effects a cure.

Leichtenstern states that spontaneous elimination by gangrene occurs in 42 per cent. of all cases of intussusception, being greatly influenced by the location of the invagination, which is ileocecal in 20 per cent.; colic in 28 per cent., and in the small intestine in 61 per cent. of the cases.

It is least frequent in children under a year old; they die of pain, inanition, exhaustion, shock, too early for the process of separation to be complete.

Leichtenstern's statistics show that sloughing of the invagination takes place in 2 per cent. of cases in 1st year; 6 per cent. of cases from the 2d to the 5th year; 38 per cent. of cases from the 6th to the 10th year; 40 per cent. of cases from the 11th to the 40th year; 44 per cent. of cases from the 41st to the 60th year; 46 per cent. of cases above 60 years.

Leichtenstern's treatise on intussusception was written in 1873. It is probable that the condition is now recognized at a much earlier stage, and that few physicians allow the invagination time to slough so that the patient dies of a laparotomy or is relieved by it. Of these cases of spontaneous elimination of the gangrenous intussusceptum 40 per cent. ultimately die of sequelæ connected with the intestinal lesions. Leichtenstern states that 15 per cent. of all intussusceptions are permanently cured by sloughing. Treves[2] more conservatively estimates the recoveries at less than 10 per cent.

In J. L. Smith's[3] collection of 52 cases in children 7 recovered by sloughing, 13 per cent.; none younger than 5 years, the ages being 5, 6, 6, 9, 11, 12, and 12, years, respectively; separation of the invaginated mass occurred in 6 cases, the average time being

9½ days. Holt[4] finds that in 362 cases of intussusception under 10 years portions of the intestine were passed per rectum in 24 cases—6 per cent.; only 2 cases occurred in infants.

I will conclude with a list of the cases of intussusception in babies, a year old or less, terminating in recovery by gangrene and elimination of the intussusceptum.

(1) Snow: history given above.

(2) Henoch[5]: expulsion of 2½ inches of gut on the third day of symptoms of intussusception.

Baby of twelve months sickened February 28th in the evening with vomiting and crying next morning, evacuations of clear blood from the anus, moderate meteorism; symptoms increased until March 2d, when Henoch first saw the case; vomiting had ceased; no fecal passage could be procured; child in collapse, with finger in the rectum the intussusceptum could be felt; after rectal examination there followed a discharge of dirty brown fluid and the expulsion of a necrotic piece of intestine 2½ inches long, its tissue belonging to the colon. During the next three days there were frequent thin fecal stools. On March 6th renewed obstruction, increased meteorism and colicky pain; nevertheless, the appearance was better, pulse stronger, no vomiting, and the nourishment was well taken. Ice was applied to the abdomen and opium given to relieve pain. On March 8th there were eight to ten fluid stools having a gangrenous odor, but no bits of bowel; the meteorism gradually disappeared; there was a copious diarrhea for some days—complete recovery.

(3) Beeston[6].—Expulsion of intestine on fourth day of symptoms of intussusception.

Baby boy seven months old came under observation on the second day of symptoms of intussusception; insufflation of air tried, unsuccessful; on the fourth day the patient had copious stools and passed a piece of fleshy looking tissue, having a fetid odor—no further trouble.

(4) Cripps[7].—Girl seven months old; ill fourteen days with intussusception which hung outside the anus, and was in a gangrenous state; a portion of this protruding mass was removed, and the rest of the slough came away, bit by bit for a month. The patient was discharged from the hospital, cured. Subsequently the child died of scarlet fever, and at autopsy the small intestines were attached to the anus. No trace of the ascending, transverse or descending colon: all had sloughed away.

(5) Steinmeyer[8].—Baby six months old—attacked with acute intussusception; on the seventh day of symptoms there appeared in the stools a segment of intestine, 27 cm. long; it was from the ileum, and the ascending colon; recovery.

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3. J. Lewis Smith. Diseases of Children, p. 790.
4. Holt. Diseases of Infancy and Childhood, p. 427.
5. Henoch. Vorlesungen über Kinderkrankheiten, p. 514.
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DISCUSSION.

DR. CHARLES P. PUTNAM, of Boston, asked if the normal function of the bowel was retained and if fecal matter and gas escaped.

DR. SNOW replied that fecal matter and gas passed every day.

DR. PUTNAM asked if the condition producing such symptoms was not rare. He believed that it almost never happened. He asked whether it had happened in the other cases referred to in the paper.

DR. SNOW replied in the negative. The case he reported, he said, was so similar to an ileocolitis, with the passage of mucus and blood, that no one could make a diagnosis. The diagnosis was only made by the protrusion of the invaginated intestine from the anus.

DR. AUGUSTUS CAILLÉ asked what portion of the intestines presented.

DR. SNOW replied that it was impossible to tell, but his own opinion was that it was the ileum. The microscopical examination showed muscular tissue; it was also impossible, on account of the advanced necrosis of the tissues, to tell whether it was mucosa or serosa that turned out.

STATUS LYMPHATICUS, WITH REPORT OF CASES.*

BY ROBERT A. BIECHELE, M.D.,
Canton, O.

Attention has recently been directed to the subject of status lymphaticus and although the very excellent contributions to the literature of this complex state have shown, to a certain extent, the fallacy of the older views, it cannot be said that much progress has been made in the direction of its clinical recognition. The recital of our postmortem findings is a rather gruesome tale, but in the light of our present knowledge we have naught else to relate.

Defining the condition as a hyperplasia of the lymphatic system, and of the thymus gland in particular, imparts confusing information that serves only to increase the haziness of a very indistinct line of demarcation separating the so-termed simple hyperplasia of lymphatic structures from that in which is associated a constant or intermittent lymphotoxemia. The condition was recognized by the early pathologists, but by them regarded as a local condition, in which the thymus gland alone was at fault. The general hyperplasia was either not observed, or if so, was regarded as a coincidence, little or no importance being attached to this manifestation until the observations of Paltauf, in 1890, removed the elements of existing doubt and demonstrated the pathological entity of status lymphaticus.

Of the numerous morbid findings, none is more constant than that of the enlarged thymus gland, and in exceptional cases this may be the only manifestation of morbidity. In appearance, the pathological specimen is not unlike that of the normal gland, unless cystic degeneration, a very unusual condition, has occurred. Upon microscopic examination, the only observable feature is the degeneration occurring in the corpuscles of Hassal. The weight varies from little above normal to 140 or 150 grams. The specimen shown in Fig. 2 is an excellent example of the enlarged thymus and weighs 52 grams; in the fresh state it appeared much larger, but there is noted a marked hypertrophy as compared to the normal gland, which is also presented in Fig. 1, the normal specimen weighing 19 grams. Associated with the enlarged thymus there is a general hyperplasia, involving part or all of the lymphatic structures and presenting various degrees of hypertrophy. The lymph nodes of the neck, axilla, groin and popliteal space may be enlarged, as may also the tonsils. Adenoids are an almost constant accompaniment. The mesenteric and retroperitoneal nodes share in the hyperplasia and (see Fig. 3) may become very large. Microscopically, they present a hyperplastic state with a vast increase in the number of germinal centres, the cells of which present a tendency to degeneration. In the intestines, the follicles are all prominent, and in the specimen shown in Fig. 4, I desire to direct attention to the marked elevation of *Peyer's patches* and a very distinct aggregation in the ileocecal region both said by Ohlmacher to be very characteristic of the condition. The follicles in the colon bear a striking resemblance to the findings in the exhausting colitis of children. Microscopically, the lymphoid elements show extensive hyperplasia and a tendency to destruction of the mucosa by self-digestion. The *spleen* is usually enlarged; its capsule smooth and free from adhesions, and the consistency almost normal; section reveals remarkable prominence of the Malpighian bodies. Microscopically, we have the attendant lymphoid hyperplasia with increased germinal centres.

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* Read at the meeting of the Ohio State Pediatric Society, May 17, 1904, Cleveland, O.

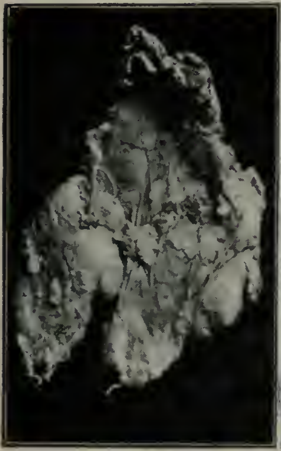


FIG. 1.—NORMAL THYMUS; WEIGHT 19 GRAMS.

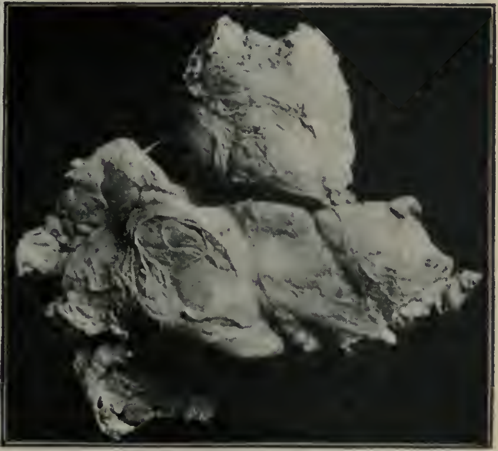


FIG. 2.—ENLARGED THYMUS; WEIGHT 52 GRAMS; (FROM CASE II.)

The *kidneys* frequently present a state of cloudy swelling with evidence of hemorrhagic extravasation. The *liver* may present evidence of fatty degeneration, the cells being markedly vacuolated. The *skin* presents a peculiar pallor, very distinctive, as is also the usual underlying cushion of fat. The respiratory apparatus presents few, if any, characteristic elements, the pathological findings being often the result of an infection immediately preceding the fatal issue. The *bronchial lymph nodes* in common with others enumerated, present the same changes, but are usually more succulent. *Hypoplasia of the heart and blood vessels* is frequently observed, the aorta and its branches in particular, being of small calibre, with walls thinner than normal.

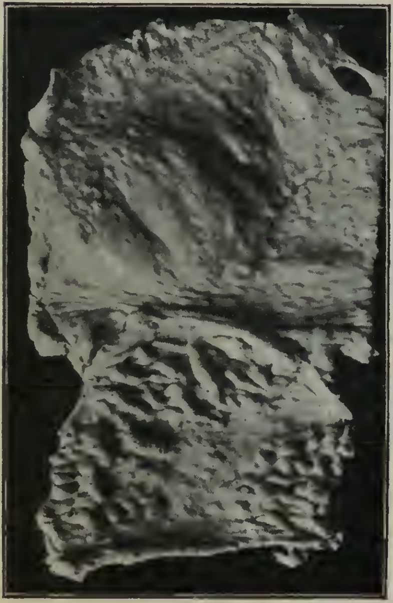


FIG. 4.—CIRCULAR AGGREGATION OF FOLLICLES IN ILEOCECAL REGION. (FROM CASE II).

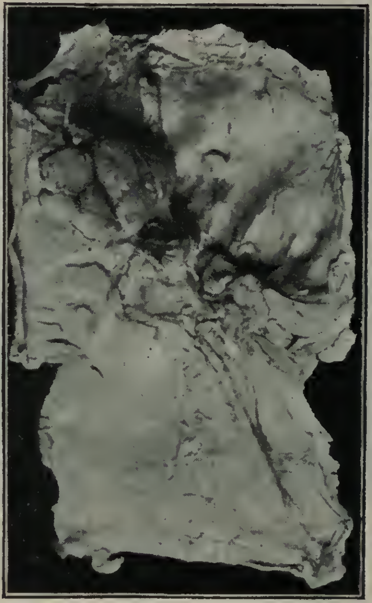


FIG. 3.—ENLARGED MESENTERIC NODES; (FROM CASE II).

Exhaustive research in the respective domains of morbid anatomy, histology and bacteriology has been unavailing in enlightening us as to the cause of death. Many theories have been advanced and powers imputed to the various structures involved incompatible with facts or findings. Of the rational explanations that of pressure of the enlarged thymus upon the trachea in the space of Grawitz was the theme of much controversy, receiving the ardent support of Recklinghausen, Nordman, Grawitz, Gluck, and others. The theory was very plausible, in view of the extremely narrow space between the manubrium and spinal column, and it was fortified by indisputable records in which pressure was evident. Emphatic in opposition to this theory was Friedleben, who denied the possibility of a fatality from pressure; his views were supplemented by the report of Scheele, who found the trachea uncompressed by a weight of 500 grams, and the more conservative report of Tamassie, who failed to produce compression with a weight of 180 grams. We are, therefore, prone to class compression of the trachea with the exceptional causes of death. In our case no evidence of unusual pressure upon the trachea was discovered, and none upon the heart, large vessels, or nerves, which covers another theory advanced.

Virchow and Rokitansky inclined to the theory of toxicity, the former assigning chlorosis as a contributory or primary cause. Paltauf, as the result of his findings, inclined to pneumonia as the cause of death. Blumer, whose observations with those of Ohlmacher and Paltauf are epochal, offers an explanation in accord with modern thought. In speaking of the relation of status lymphaticus to sudden death, he says:—"We would suggest that individuals who are subjects of the status lymphaticus are born with an instability of the mechanism regulating the 'horror autotoxicus,'

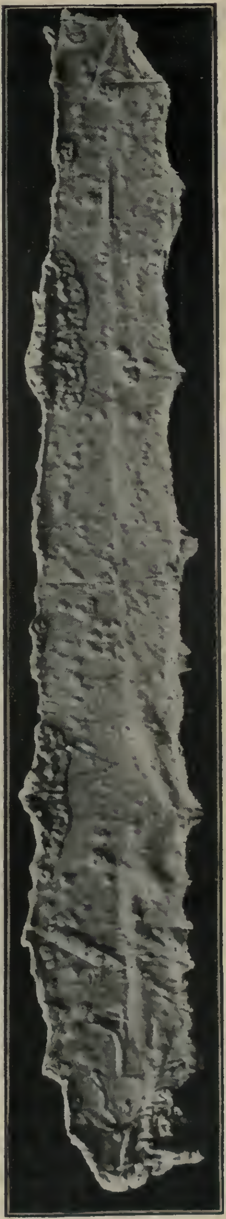


FIG. 5.—PORTION OF ILEUM SHOWING ENLARGED AND ELEVATED AGMINATED GLANDS; (FROM CASE II.)

at any rate, so far as the lympathic apparatus is concerned, so that they are subject to intermittent attacks of lymphotoxemia, which may lead to nervous phenomena of various kinds, or may cause death from cardiac paralysis." The above hypothesis, we believe, is explanatory of many of the perplexing phenomena observed, and we believe will be sustained by future research. The available literature bearing upon the clinical aspect, is rather meagre, due perhaps to the fact that the diagnoses in the past have been largely postmortem and that the condition was supposed to be infrequent. The grave type of the condition is undoubtedly infrequent, but we incline to the belief that in every case of lymphatic hypertrophy we have present the distinctive elements of status lymphaticus. The existing tendency to regard these hypertrophic states as trivial and dismiss them with but a passing thought is fraught with danger and, until it is possible to point out distinctive features that will enable the diagnostician to make a differentiation, prudence should dictate the classing of all as status lymphaticus. The most trivial injury, when complicated by this state, may prove fatal.

CASE I.—Although the diagnosis in the case I now report was unconfirmed by postmortem examination, its history and course justify me in classing it as status lymphaticus. Laura W., age eleven months, was first observed when six months of age. She was suffering from enterocolitis during the course of which she had an attack of thymic asthma and several slight convulsive seizures. Evidence of rickets was well marked. Holding the child face downward, percussion revealed a marked increase of dullness in the region of the thymus; the tonsils were large; adenoids prominent; superficial lymph nodes not much enlarged. The child's condition improved, and at eleven months she appeared well nourished and healthy. March 1st, while in the sitting posture, she fell from a child's stool, striking the side of her face upon the floor. Convulsions supervened at once and the nearest physician was called in. I reached the house soon afterward, and the convulsions ceased in about two hours; then thymic asthma developed, continued about three hours, and this was followed by a short period of coma; then again there were convulsions which continued until death occurred twenty-two hours after the receipt of an injury so slight that under ordinary circumstances it would pass unnoticed.

In reviewing this case our attention is arrested by phenomena and conditions, which established facts that justify us in classifying as diagnostic of the status lymphaticus. Of these thymic asthma is pre-eminent. Thymic asthma has always occupied a conspicuous place in the discussions upon the subject, and although classed by some writers as a neurosis, because of confusion with laryngismus stridulus, established facts indicate its etiology to be that of thymic struma.

Of equal importance are the convulsive seizures; the available statistical data show in a great number of cases the presence of convulsions at some time during the active stage of lymphatism. By some authorities these seizures have been termed epileptiform, in support of which the observations of Ohlmacher that there is a very frequent association of epilepsy with status lymphaticus are almost conclusive. In all of the 3 cases reported, epileptiform convulsions were present.

As to the existence or non-existence of rickets, Paltauf recognizes a form in which there are no rickety manifestations. In view of this statement we would say that although usually coincident, rickets is not constant. Very characteristic and almost always present are enlarged tonsils and adenoids, and so thoroughly is their existence interwoven with that of status lymphaticus, that given in addition one or more of the recognized symptoms, we may in most instances be safe in assuming the existence of this peculiar status.

No less startling than the occurrence of death from trivial injuries is that resulting from some simple surgical procedure, or during the administration of an accredited safe anesthetic. Numerous writers have cited instances where simplest interference has terminated fatally, most famous of which is the Langerhans' case, in which the injection of antidiphtheria serum was attended with such unfortunate results. An explanation of the case has been given us by Dr. Langerhans in his article entitled "Tod durch Heilserum." Recognizing these possibilities, and being mindful of the hazard, the surgeon should always be on the alert and his prognosis guarded whenever the lymphatic structures are involved.

In order to abbreviate, we have omitted much of great importance in the discussion of this subject, but beg leave, because of the intimate relation existing in the following report of cases, to touch upon the relation of status lymphaticus to infection. To the observing clinician, no fact is more potent than the marked proneness on the part of subjects exhibiting lymphatic tendencies to acquire infections and to develop complications and sequelæ. In illustration of this statement it is but necessary to mention diphtheritic infections. With dire foreboding, heroic doses of serum are administered early in the disease, only to prove of no avail. The knowledge so far accumulated, does not enable us to determine whether there is a modification or masking of infections, or whether the unusual and extreme susceptibility to toxic or bacterial invasion is accounted for by the far reaching side chain hypothesis of Ehrlich.

Whatever the facts may be, there is beyond doubt an unusual susceptibility to infection in cases of status lymphaticus, as the following report of cases will demonstrate.

CASE II.—Willie B., age twenty-two months, had always been very healthy up to the morning of November 4th, when his mother noticed an elevation in body temperature. The other members of the family, consisting of parents and three children, had all suffered from an influenza, which in their cases followed the usual course. I visited the little patient during the morning of the first day and found him in a state, typical of influenza in a mild form. There were no unusual manifestations until the morning of the second day, when, without premonitory symptoms, he developed convulsions epileptiform in character, occurring at first at intervals of about thirty minutes; but in about two hours the convulsive explosions recurred with such rapidity as to be almost constant and continued until death, about four hours after the first seizure and about thirty-five hours from time of first evidence of influenza. The postmortem examination, conducted by Dr. George Zinninger, to whom I am indebted for this report, revealed the following:—

Body well developed and nourished, skin flabby, panniculus adiposus abundant. Tonsils greatly enlarged, adenoids well marked, rickety manifestations. Upon opening the thorax a very large thymus presented itself, reaching from above the episternal notch well down over the pericardium and having two large lateral lobes. The organ measured 10 x 9 x 2 cm., and weighed 52 grams. The gland snugly filled out "the critical space of Grawitz," but the trachea was apparently not compressed to any great degree. The heart and lungs were normal. The bronchial lymph nodes were enlarged and succulent. The spleen was enlarged, its capsule smooth and free from adhesions; it was of normal consistency and upon section the Malpighian bodies stood out with startling distinctness. The intestinal mucous membrane was pale and in the ileum the agminated glands were very large and elevated. The solitary follicles varied in size from mere points to the size of small split peas. The solitary follicles throughout the large intestines were very conspicuous, as the specimen shows. The mesenteric lymph nodes were exceedingly numerous, and varied in size from wheat grains to large beans; upon section they were succulent and of a translucent gray color. The retroperitoneal nodes were similarly hypertrophied. The stomach was all but completely destroyed by self-digestion, so that no detail was possible. No gross lesions of kidney and pancreas were noted. The liver was of normal size and gray upon section.

Microscopic Examination.—The thymus shows hyperplasia of lymphoid elements: Hassal's corpuscles, which are numerous, show degeneration, presenting a glassy appearance. The lymphoid elements of the intestine show very extensive hyperplasia, but otherwise normal. The secreting mucosa is destroyed throughout by self-digestion. The mesenteric lymph nodes are hyperplastic, the number of germinal centres being truly remarkable, many cells of which show degeneration. The spleen also shares in the general lymphoid hyperplasia. The germinal centres, however, which are not nearly so numerous as in the lymphatic nodes, are the seat of extensive degenerative processes. The cytoplasm of the cells is granular, taking the eosin stain poorly, while the nuclei are in a state of karyorhexis. The liver is the seat of a rather wide and diffusely distributed fatty degeneration, the cells being markedly vacuolated, while the process is diffusely distributed, yet the periphery of the lobules suffered more than the centre. The kidneys are in a state of cloudy swelling, with some evidence of hemorrhagic extravasation.

Closely following this was another experience, the clinical picture of which was an almost perfect reproduction of case just detailed.

CASE III.—Alice R., age thirteen months, plump, happy and always apparently well, except for periodic attacks of tonsillitis, each succeeding attack leaving the tonsils a little larger than before. The entire family, consisting of parents and three children, were convalescent from influenza, when this baby developed active symptoms of the same infection. As I was visiting the other members of the family at the time, I saw this child very soon after the first manifestation of illness, and because of the striking similarity and coincidence of conditions and surroundings of this and my previous case, I left instructions to be called upon the first indication of greater disturbance, which occurred toward evening, when a temperature of 103° F. and pulse rate of 126 was recorded. The following morning, the temperature was 99.6° F., pulse 124. The child appeared bright, but restless. About twenty minutes after this visit the child became convulsed, dying during the third seizure, the last of which I witnessed and found to be epileptiform in character. A complete postmortem examination was refused, but permission was granted to examine the thymus gland, a digital exploration of which revealed a very marked enlargement, apparently as great or greater than the specimen shown in Fig. 2. In addition to this, there were present very large tonsils and adenoids, with a very extensive hypertrophy of the superficial glands. This child had been a mouth breather since birth. There was no evidence of the existence of rickets, but a spleen that was very easily palpated.

Active Antidiphtheritic Serum.—Kershun, Nedrigailoff, and Ostrianine (*Russki Vratch,* May 3, 1903) communicated to the Eighth Pirogoff Congress, Moscow, the results of a series of experiments which enabled them to produce a very concentrated antidiphtheritic serum. They found that the virulence of the initial toxin which was used to immunize horses did not matter, and that with the proper doses, a weak toxin could produce as good results as a strong one. The horses must be carefully selected, and the best age is from four to nine years. The amount to be introduced into the animal is a matter of dispute. Many authors assert that it is advisable to inject as large a quantity as possible to start with, and to increase it from time to time. The present authors have found on experiment, that it is far better to introduce frequent doses of small size than larger, maximum doses at infrequent intervals. Cases in which larger doses were used showed a violent temperature reaction and the authors were unable to obtain in these horses more than one hundred units of antitoxin per cubic centimetre. With small, frequently repeated doses they obtained a concentration of 500 units to the cubic centimetre. Finally, by still reducing the doses and increasing the frequency, though not beyond a daily injection, the authors obtained one thousand units per cubic centimetre.—*New York Medical Journal and Philadelphia Medical Journal.*

Clinical Memoranda.

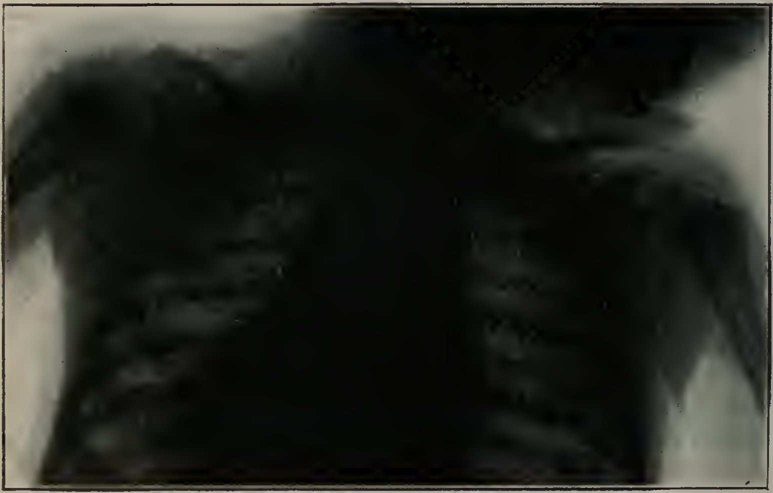
TWO CASES OF CONGENITAL DISLOCATION OF THE SHOULDER JOINT.

BY FRANK E. PECKHAM, M. D.,
Orthopedic Surgeon to the Rhode Island and St. Joseph's Hospitals,
Providence, R. I.

The comparative rarity of such dislocations and the small number that have been reported are the excuses for presenting these cases. There seems to be some discussion as regards the ability to know definitely whether or not such dislocations are congenital. In Case I. no electrical tests were made before operation. The x-ray plate, however, was taken, and tells its own story.

CASE I.—R. M. G., aged eleven months; referred by Dr. Rutherford. *Physical examination* showed the right shoulder to be dislocated, so that the head of the humerus was under the spine of the scapula. With the head between the fingers rotation could be distinctly felt in this position. The arm was rotated inward so that the back of hand looked forward and inward much like an obstetrical paralysis. The baby was unable to turn the arm or to get the hand anywhere near the mouth. There was almost no power of elevation, and any attempt at motion in this direction carried the scapula with it on account of the locking of the head under the spine. Reduction was possible, but the head of the bone refused to stay in the socket. The x-ray plate shows that the humerus is somewhat smaller than on the well side. There was no violence or protracted labor or any other evidence of traumatism. Although there were no electrical tests made, I think the muscles would have reacted, as there seemed to be no paralysis.

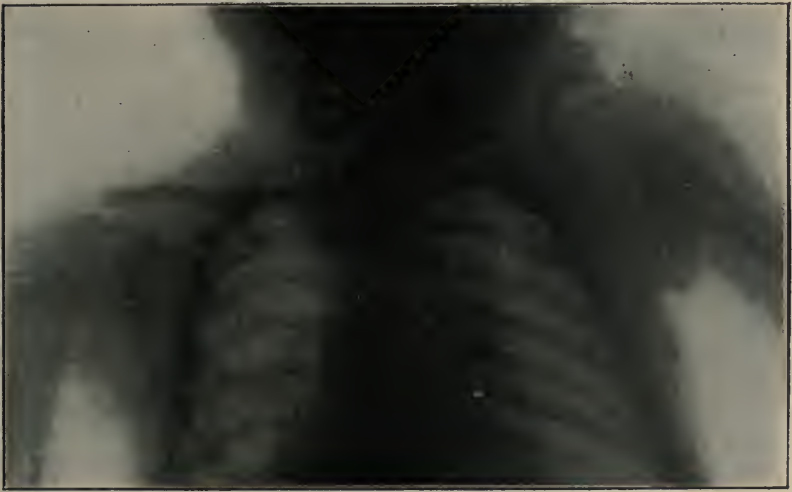
Operation June 25, 1903.—The joint was opened from behind, the Phelps' operation being used. The head of the bone was found beneath the spine of the scapula, as previously described. The glenoid fossa was apparently normal, although the finger was not inserted to ascertain whether the shape was changed. Reduction was made and found to be stable, when a certain amount of external rotation was made. The capsule was closed without any resection and the arm bandaged and held firmly with sufficient external rotation to keep it in place. After the bandages were omitted the arm was still held to the side by adhesive plasters, thus allowing some use of the hand. It was not until October 7, 1903, that all bandages and straps were omitted, being a little over three months after the operation. The arm was then in the correct position, but the baby used it very little. Passive motion was employed and the arm constantly elevated above the head in order to restore the motion in extreme abduction. The ability to use the arm has increased slowly. At present the baby can get the hand to the mouth, but cannot raise the arm any higher.



CASE I.—CONGENITAL DISLOCATION OF RIGHT SHOULDER.

CASE II.—M. S., aged twenty-two months. There was no history obtainable of the birth of this child, so it is not known whether it was instrumental or protracted. The physical examination showed the arm to be hanging by the side as in an obstetrical paralysis. The arm was rotated inward, the back of the hand looking forward and somewhat inward and the child unable to get the hand anywhere near the mouth or to use it very much in this position. The head of the humerus could be felt under the spine of the scapula and any attempt at elevation in the line of abduction forced the scapula to go with it. An x-ray plate showed the absence of the head of the bone from its socket. The electrical tests were very carefully made for me by Dr. Shattuck. All of the muscles were found to react to both the faradic and galvanic currents, though the reactions were possibly very slightly less than on the normal side.

Operation October 7, 1903. The Phelps' operation was done, the head of the bone being found under the spine of the scapula as described. The glenoid fossa was normal. The head was reduced and in this case a small portion of the capsule was excised. As in the preceding case the arm had to be bandaged with some external rotation in order to prevent re-dislocation. The dressings were removed November 14th, five weeks after operation, and passive motion begun. The bandages were removed very much sooner in this case, hoping thus to obtain freer motion, but this result was not obtained. At present the baby gets its hand to the mouth and is using it a little better as time goes by.



CASE II.—CONGENITAL DISLOCATION OF LEFT SHOULDER.

Conclusions.—As far as can be seen the results are about alike in the 2 cases, and why there should be inability to elevate the arm is not evident. Phelps advised putting the arm up straight at the first dressing, thinking thereby to secure motion in this direction.

In Case I. there was positively nothing done that could not have been done without cutting, and in another case at so young an age I should feel like reducing without a cutting operation and bandaging the arm in the same position as above for two or three months.

A CASE OF ACUTE DELIRIUM IN A SEVEN-YEAR-OLD CHILD, PROBABLY CAUSED BY ATROPIN POISONING.

BY I. A. ABT, M.D.,
Chicago.

A female child, seven years old, suffered for a long time from enuresis nocturna. From the first of January until the middle of April she had been taking two tablets daily, each containing $^1/_{200}$ grain of atropin. The enuresis improved very much and the use of the medicine was continued. For several days the child had complained of dizziness at school, though she appeared in other respects well. The mother had noticed that she flushed or blushed frequently during the past few days; the flush lasted for a short time and then passed away. Her appetite was good, she slept well, her bowels were regular, she was full of life, and on the afternoon before she was taken ill had skated for a long time on roller skates. She ate her supper as usual, and was put to bed.

Between ten or eleven o'clock in the evening, the nurse found that she had not fallen asleep as usual; she was restless, and slightly delirious. This restlessness and slight delirium continued and became more marked after midnight. I was called to see her about two o'clock in the morning, the parents reported that for several hours she had been actively delirious. She was excitable, pointed out of doors where she believed that the neighbor's house was on fire, and no amount of persuasion could convince her that her own home was not already aflame. The little patient herself, together with her sister and nurse, had been rescued from the Iroquois fire several months before; this was thought by the parents to explain in some way the sudden onset of the delirium. She could not answer questions rationally, though she was extremely voluble; the delirium was very active, and she did not seem to be in fear, though her notions were strangely perverted. The examination showed her pulse between 80 and 90 and of good quality. The respirations were 24 or 26 per minute; the temperature was normal; the pupils were dilated, and reacted slowly to light; the tongue and mouth were dry. The examination of the chest was negative, and there were no abdominal findings; the reflexes responded sharply and promptly, but were not exaggerated. Indeed there was nothing which was suggested that night, either in the history or the physical examination, save perhaps the shock sustained several months before in the Iroquois Theatre fire, which could explain the sudden delirium. The child was given paregoric and bromide by mouth, and several large doses of chloral by rectum; she was quieted with great difficulty, and remained restless and talkative nearly all night.

After leaving the case that night it occurred to me that she had been taking atropin for her enuresis, and that this might bear a causal relation to her delirium. I saw her again early next morning, and learned that the atropin pellets had been given more or less continuously in the manner stated. The patient still continued delirious. She was sure that the house next door had burned down, that the grass was still on fire; she insisted on arising from her bed and pointing out the effects of the fire to me; the pupils continued dilated, the pulse was only moderately rapid, the temperature was normal; she was ordered to remain in bed. The camphorated tincture of opium was continued, and the atropin tablets were stopped. I saw her again on the morning of the third day of her illness; she was still voluble, and in reply to my question as to whether she was all right now, said she was sure that there had been a fire in the neighborhood, and that nobody could talk it out of her. This, however, was the last of her delusion; she never referred to the fire again, nor has she had any delirium since; she was kept in bed for a full week, carefully watched. Nothing occurred after this day. I have seen her several times since; she is bright, happy and intellectually clear.

There are several facts which speak undoubtedly in favor of the atropin as the cause of this delirium. First, the history of the continuous use of the atropin, the dilatation of the pupils, the dizziness from which the child had complained, the blushing or flushing which had been noticed by the mother for several days prior to the onset of the delirium, and the delirium itself. That the pulse continued normal, not accelerated, and that the respirations were not much increased, are to be regarded in this case as unusual features of the poisoning. That the child continued apparently well, until of a sudden, as if by an explosion, the delirium developed, is an unusual manifestation in atropin poisoning.

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JULY, 1904.

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EPIDEMIC CEREBROSPINAL MENINGITIS.

While it is generally conceded that socalled cerebrospinal meningitis occurs in sporadic form in cases in and about our eastern cities with sufficient frequency for us to consider the disease as endemic, there can be no doubt that for several months past this affection has existed in epidemic form. The figures given by Dr. Chapin at the May meeting of the Medical Society of the County of New York, show that for the last ten or twelve weeks the disease has been during this period at least nearly ten times as frequent on the average as during the corresponding period last year. This is certainly sufficient evidence of its present epidemicity. While the disease has occurred in many parts of New York City, so that it can scarcely be said to exist more in one place than another, it has shown a special tendency to occur most frequently in crowded and uncleanly parts of the city.

It has been noted by many observers, and such authorities as Eichhorst and Strümpell have called particular attention to it, that there seems to be some as yet inscrutable connection between pneumonia and epidemic cerebrospinal meningitis. Pneumonia is apt to rage with more virulence about the time that this form of meningitis becomes more frequent, and, on the other hand, it is not unusual to have meningeal complications of pneumonia occur much more often during an epidemic of cerebrospinal meningitis. This observation is exemplified in the present instance, for we have perhaps never had more cases or more serious cases of pneumonia than during the present spring. Just what the connection is between the two diseases cannot, however, as yet be determined.

A few years ago it was considered that the organism of epidemic cerebrospinal meningitis found its way to the meninges through the nasal chambers. Something of this conclusion was due to the discovery of various forms of diplococci in the nose. It is doubtful whether the differentiation of these was made with sufficient exactness to establish the presence of the genuine diplococcus intracellularis there. Many bacteriologists, however, seem to consider that as the pneumococcus occurs in the throats of healthy individuals, so the diplococcus of Weichselbaum occurs in the noses of the healthy until an opportunity occurs for its entrance into the tissues, when it usually finds its way to the meninges. There is even a doubt in the minds of some as to whether, as in tetanus, the microorganism may not find its mode of entrance through some external wound, and yet only produce its effects when it succeeds in reaching the nervous system.

The most interesting problem with regard to the disease is the manner in which it spreads. It does not act like a contagious disease in the ordinary sense of the word, for the contact of new cases with preceding cases cannot be traced with any degree of certainty and the disease seems to break out here and there, without any definitely traceable relation always to former cases. In Europe the observation has been made that sporadic cases of specific spinal meningitis occur quite frequently in tramps and vagrants who pass from town to town, and live in squalor and uncleanness. After one of these cases has occurred in a town it is not unusual to have other cases of the disease break out, so that this method of transmission has been discussed. On the other hand, the fact that the disease is almost surely due to Weichselbaum's diplococcus intracellularis, would seem to indicate the possibility of its transmission from person to person where proper antiseptic precautions are not taken. There would seem to be a distinct element of danger in allowing free intercourse with a family in which the disease has occurred, and the decision of the Department of Health to consider epidemic cerebrospinal meningitis as an infectious disease, so that pupils in whose families a case exists are not allowed to go to school, is amply justified, and indeed no other policy could with safety be followed.

Owing to the many anomalous types of the disease which occur diagnosis is not always easy. Dr. Winter's experience, as described at the meeting of the New York County Branch of the New York State Medical Association, in which some cases seen in an educational institution were at first considered to be due to poisoning, gives a good idea of how much care must be exercised where sudden, severe cases are seen, even though there may be no examples of the disease in the neighborhood. On the other hand, mild cases of the disease may escape notice and thus may prove a source of infection for others. Where doubt exists, lumbar puncture constitutes the only sure way of making a differential diagnosis. According to the experience of Dr. Lambert, at Bellevue Hospital, and of Dr. Manges, at Mt. Sinai Hospital, and also Dr. Chapin's experience, the diplococcus intracellularis is found in all but a very few cases of the disease. The removal of fluid from the spinal canal by lumbar puncture has been thought by some physicians to be too severe a procedure. As, however, besides aiding in diagnosis this method represents what is probably the best therapeutic measure that we have, its use should not be limited as much as it is to hospital practice.

Besides lumbar puncture very little has been done in the matter of satisfactory treatment. The injection of lysol in 1 per cent. solution in small quantities has seemed in some hands to bring relief of symptoms, and in others not to have any noticeable effect upon the disease. This form of treatment appears to be well worth trying in severe cases. All are agreed that opium must be freely used and that patients must be kept from suffering severe pain, no matter how much of this drug it may be necessary to employ for the purpose. Restlessness only adds to the patient's discomfort, and gives opportunities for the spread of the infectious material to hitherto unaffected portions of the nervous system.

The prognosis of the disease is always uncertain. Severe cases may suddenly have a change for the better and get entirely well. On the other hand, mild cases may suddenly have a turn for the worse with a fatal issue, or with long standing coma as a result and then unfortunate enduring sequelæ. The more severe the symptoms at the beginning of the disease the more serious is the outlook. It must not be forgotten that serious cases that have been for weeks in coma and seem hopeless may get better. Even very serious complications may clear up completely, taking a long time to do so. In some cases it is several years before all traces of the disease disappear, and yet a perfectly normal condition is re-established.

In a word, our knowledge of the disease is most unsatisfactory and it is hoped that the present epidemic will furnish opportunities for investigation as to mixed infections and the like that will add to our scanty store of information.

J. J. WALSH.

Bibliography.

Technique du traitement de la Coxalgie, par le **Dr. Calot** chirurgien en chef de l'hôpital Rothschild, de l'hôpital Cazin-Perrochaud, de l'hôpital de l'Oise et des départements, du Dispensaire, de l'Institut Orthopédique de Berck, etc. 1 vol., avec 178 fig. pp. 234. Masson et Cie, Paris. 7 fr.

The author states that the book has been written by a specialist solely for the general practitioner, under whose care the majority of the cases of hip disease must necessarily fall. He has not, therefore, encumbered it with pathological discussions, nor has he described the "36" conflicting methods of treatment that may be found in other works on the subject. He has confined himself to the detailed description of one method and has so illustrated the steps of its application that, in his opinion, any physician by the aid of this book may treat the disease with success.

The method is, in brief, the use of the long and short plaster spica bandages, deformity having been reduced by traction or, preferably, by force under anethesia. Aspiration and injection of abscesses, the operations of excision of the hip, etc., osteotomy and osteoclasis are described, although it is doubtful if they are likely to be employed by the general practitioner. The book evidently represents the treatments followed at Berck. It contains nothing original or new, but the principles governing diagnosis and treatment are sound and the various manipulations are admirably illustrated by photographs.

It is stated that this volume is to be followed in due season by others, taking up the subjects of congenital dislocation of the hip, club-foot, lateral curvature of the spine, etc. Thus eventually, Dr. Calot's treatise on Orthopedic Surgery will be complete. If he is able in each section to limit treatment to one method, and if this method is as easily learned and as easily and successfully applied as is, in his opinion, that for hip disease, maybe a very notable book will have been written.

Society Reports.

MINUTES OF THE SIXTEENTH ANNUAL MEETING OF THE AMERICAN PEDIATRIC SOCIETY.

Held at Detroit, Mich., on May 30, 31 *and June* 1, 1904.

The following members were present:—I. A. Abt, M.D., Chicago; G. N. Acker, M.D., Washington; S. S. Adams, M.D., Washington; A. Baines, M.D., Toronto; A. Caillé, M.D., New York; F. S. Churchill, M.D., Chicago; A. C. Cotton, M.D., Chicago; F. M. Crandall, M.D., New York; J. Dorning, M.D., New York; F. Forchheimer, M.D., Cincinnati; R. G. Freeman, M.D., New York; L. E. Holt, M.D., New York; A. Jacobi, M.D., New York; C. G. Jennings, M.D., Detroit; C. G. Kerley, M.D., New York; S. M. Ladd, M.D., Boston; L. E. La Fétra, M.D., New York; J. L. Morse, M.D., Boston; W. P. Northrup, M.D., New York; C. P. Putnam, M.D., Boston; B. K. Rachford, M.D., Cincinnati; T. M. Rotch, M.D., Boston; I. M. Snow, M.D., Buffalo; J. P. West, M.D., Bellaire; J. E. Winters, M.D., New York.

FIRST SESSION, MAY 30TH, 10 A.M., RUSSELL HOUSE.

Dr. Irving M. Snow, of Buffalo, read a paper on "Intussusception in a Baby of Seven Months: Elimination of the Invaginated Bowel by Gangrene; Cure."

Discussion by Drs. Putnam and Caillé.

Dr. S. Maynard Ladd, of Boston, presented a paper entitled, "An Investigation of the Influence of Laboratory Feeding on 216 Infants with Diseases of the Gastroenteric Tract," with special reference to the Weight Index.

Discussion by Drs. Kerley, Freeman, Crandall, La Fétra, Putnam, Holt and Ladd.

Dr. L. Emmett Holt, of New York, read a paper entitled, "Disturbances from High Fat in Infant Feeding."

Discussion by Drs. Northrup, Kerley, Crandall, Morse, Rotch, Rachford, La Fétra, Putnam, Winters, Jacobi and Holt.

Dr. John Dorning, of New York, presented a paper on "Congenital Hypertrophic Stenosis of the Pylorus."

Discussion by Drs. Northrup, West, Morse, Holt, Rotch, Caillé and Dorning.

SECOND SESSION, MAY 30TH, 2 P.M.

Dr. Augustus Caillé, of New York, read a paper entitled, "A Cure of Chronic Nephritis following Renal Decapsulation: Second Report."

Discussion by Drs. Kerley, Putnam, La Fétra, Forchheimer and Caillé.

Dr. A. C. Cotton, of Chicago, read a paper entitled, "Some Observations on Epidemic Vulvovaginitis in Infants and Children."

Discussion by Drs. Northrup, Kerley, Jacobi, La Fétra, Acker, Abt, Caillé, Adams and Cotton.

Dr. Samuel S. Adams, of Washington, presented a paper entitled, "A Case of Carbolic Acid Poisoning Simulating Acute Scarlatinal Nephritis."

Dr. B. K. Rachford read a paper on "Gastrointestinal Toxemia."

Discussion by Drs. Jacobi, Forchheimer, Northrup and Rachford.

Dr. Charles G. Kerley presented a paper entitled, "Clinical Manifestations of Acute Otitis in Children: A Study of Fifty-one Cases in Private Practice."

Discussion by Drs. Rotch, Cotton, Morse, Abt and Kerley.

7 P.M., DINNER AND ENTERTAINMENT BY THE WAYNE COUNTY MEDICAL SOCIETY. JOINT MEETING.

THIRD SESSION, MAY 31ST, 9:30 A.M., RUSSELL HOUSE.

Dr. William P. Northrup, of New York, read a paper on "Nervous Exhaustion in Infants."

Discussion by Drs. Cotton, Caillé, Putnam, Adams, Freeman, Churchill and Northrup.

The annual address of the president, entitled, "The Influence of American Pediatric Societies in Promoting the Welfare of American Children," was read by Dr. Augustus Caillé, of New York.

Dr. J. Lovett Morse, of Boston, presented a paper entitled, "Analysis of One Hundred and Eighteen Cases of Lobar Pneumonia in Infancy."

Discussion by Drs. Kerley, Abt, Churchill, Holt, Adams, Northrup and Morse.

Dr. Rowland G. Freeman, of New York, read a paper on "Acute Pyelitis in Infancy."

Discussion by Drs. Morse, Abt, Rotch, Dorning, Crandall, Holt, Jacobi and Freeman.

Dr. F. Forchheimer, of Cincinnati, presented a paper entitled, "Acute Myocardial Insufficiency in Some Infections of Children."

Discussion by Drs. Rotch, Jacobi and Forchheimer.

FIFTH SESSION, JUNE 1ST, 10 A.M., COUNTRY CLUB.

Dr. Linnæus E. La Fétra, of New York, read a paper on "Bronchial Asthma in Infants and Children: a Study of Forty-three Cases."

Discussion by Drs. Jennings, Holt, Crandall, Caillé and Northrup.

Dr. William P. Northrup, of New York, presented a paper entitled, "Dyspnea, Central, Peripheral, Obstructive: Cases."

Discussion by Drs. Holt, Crandall, Abt, Caillé and Northrup.

Dr. F. S. Churchill, of Chicago, read a paper entitled, "Acute Leukemia, with Report of a Case."

Dr. L. Emmett Holt, of New York, read a paper entitled, "Adenosarcoma of the Liver."

Discussion by Drs. Abt, Northrup and Caillé.

Dr. Samuel S. Adams presented, for Dr. H. B. Sheffield, the "Radiograph of a Case of Abdominothoracopagus."

The following papers were read by title:

Dr. A. H. Wentworth, of Boston, "A Study of the Metabolism of Atrophic Infants and Children."

Dr. H. L. K. Shaw, of Albany, "A Case of Congenital Pyloric Stenosis in an Infant: Operation: Recovery."

Dr. Henry D. Chapin, of New York, "The Management of Convalescent Infants and Children, after Leaving the Hospital."

Dr. Henry Koplik, of New York (*a*) "The Rachitic Hand"; (*b*) "The Clinical Features and Diagnosis of Tuberculous Meningitis"; (*c*) "Percussion of the Head in Infants and Children, with Special Reference to the Value of the Macewen Sign in Meningitis."

Dr. E. W. Saunders, of St. Louis, "A Plea for the More Timely Use of Intubation in Laryngeal Stenosis, and for the Use of Tracheotomy in Certain Neglected Cases."

Dr. D. J. M. Miller, of Philadelphia, "Hypertrophic Osteoarthropathy in Children; its Relationship with the Ordinary Clubbed Fingers of Chronic Heart and Lung Affections."

Dr. Francis Huber, of New York, "Observations on Cerebrospinal Meningitis."

Dr. T. M. Rotch, of Boston, "Some Considerations Regarding the Problems of Infant Feeding."

FOURTH (EXECUTIVE) SESSION, MAY 31ST, 2 P.M., DETROIT CLUB.

Dr. C. P. Putnam, Chairman of the Council, presented the following report of the Council:

It is recommended that the resignations of the following gentlemen be accepted with regret:—Dr. J. C. Wilson, of Philadelphia; Dr. Henry Jackson, of Boston; Dr. Alfred Stengel, of Philadelphia. The recommendation was adopted.

The following officers were elected for the ensuing year:—President, Dr. C. G. Jennings; First Vice-President, Dr. C. G. Kerley; Second Vice-President, Dr. T. S. Westcott; Secretary, Dr. Samuel S. Adams; Treasurer, Dr. J. Park West; Recorder and Editor, Dr. L. E. La Fétra.

Dr. J. P. C. Griffith was appointed a member of the Council to succeed Dr. J. C. Wilson, resigned. Dr. J. L. Morse was elected a member of the Council to succeed Dr. C. P. Putnam, retired.

It was recommended that the next annual meeting be held at Sagamore Inn, Lake George, N. Y., June 19, 20 and 21, 1905.

Dr. Percival J. Eaton, of Pittsburg, Pa., was elected to membership.

Dr. L. E. Holt moved that the secretary be instructed to furnish the mailing list to all the members of the society, that they might recommend additions to the list, particularly to dispose of the surplus volumes in the hands of the secretary. Adopted.

Dr. Putnam moved that the Council be authorized to furnish 200 additional volumes of the Transactions, if it was thought necessary. Adopted.

It was recommended that E. B. Treat & Co. be given the work of publishing the transactions of the Society as it had been done so satisfactorily this year.

The secretary was instructed to express the thanks of the

Society to the Detroit, Yondotega and Country Clubs of Detroit, and to Parke, Davis and Co. for courtesies extended.

Upon motion the retiring president was thanked for the efficient and impartial manner in which he had conducted the affairs of the Society.

Upon motion of Dr. Jennings, the thanks of the Society were expressed to the secretary for the earnest efforts to make this meeting a success.

Upon motion, Dr. Jennings was thanked for his efforts to make the meeting successful and pleasant to the members.

Meeting adjourned.

LINNÆUS E. LA FÉTRA, M.D.,
Recorder.

The Value of Antitoxin as a Prophylactic in Diphtheria.—The following highly interesting statements were made by Netter, at the recent International Congress of Hygiene at Brussels (*Gazz. d. Osp.,* November 3, 1903): At the request of the Pediatric Society of Paris over 11,300 prophylactic injections of diphtheritic antitoxin were reported, of which some were made in private practice, and many in public institutions. The conclusions drawn are to the effect that these injections confer an almost complete immunity, which begins twenty-four hours after the injection has been made, and usually lasts for about one month. Those that get the disease pass through a benign, considerably modified, form of it, similar to the varioloid of vaccination. Accidents attending these injections are few and of little importance, usually occurring in adults; abscesses must be accounted for by lack of cleanliness. The usual dose employed as a prophylactic was 500 units. All children of a family where there is a case of diphtheria should receive prophylactic doses of the antitoxin; this measure is of especial importance in cases of public institutions, schools, colleges, etc. Wherever there is a prevalence of diphtheria in institutions it is advisable to subject the children to monthly prophylactic treatment, as outlined above, until the epidemic is thoroughly stamped out. This should also apply to cases of measles, scarlet fever and doubtful infections; the injections here should be stronger and at shorter intervals. Löffler and Netter obtained a unanimous approval of the Congress as regards the above measures.—*Medical News.*

THE AMERICAN MEDICAL ASSOCIATION.

Fifty-Fifth Annual Session, Held at Atlantic City, N. J., June 7, 8 and 9, 1904.

SECTION ON DISEASES OF CHILDREN.

Dr. Charles G. Kerley, of New York City, Chairman.

First Day, Tuesday, June 7th.

Chairman's Address:—"The Demands of the Child by Virtue of Right."

The author stated that for the growth and development of mammals, of which man was the highest type, there must be a means of nutrition and surroundings suitable to the habits of the animal; conditions ordained by nature, the lack of which invariably produced inferior growth and physical degeneration.

The child was a young animal, so far as its physical characteristics were concerned. In order that a vigorous adult might be produced, suitable nutrition, plenty of fresh air and cleanliness were absolutely necessary. In the child's daily life there must be an absence of worry and anxiety; an absence, to a great degree, of responsibility; an absence of work of an exhausting nature until the adult period was reached. A child should make its first year's growth and development during the first year; its second year's growth and development during the second year, and so on. In order to make the best adult, both physical and mental, every year of the growing period must supply its quota of physical and mental development. The child will never do its first or second year's growing satisfactorily during the fifth or sixth year, nor its fifth or sixth year's growing during its tenth or twelfth year. Protracted faulty nutrition, overwork at school, employment of an arduous nature in mines, stores or factories during the developmental period leave their indelible stamp on the adult, as evidenced by stunted growth, lack of endurance, lack of resistance to disease, lack of capacity for work, together with an absence of a high order of mental capacity and force—a condition so often found in the weak.

That portion of the rising generation which will do the nation's work, fight the nation's battles, do the nation's thinking, are those who are now receiving what we all admit the child has the right to demand. They are getting food suitable to the development of their bodies; they have the benefit of fresh air and cleanliness, and a life devoid of care. They are having the benefits of secular and religious instruction. Those who are treated otherwise will form a large proportion of the future dependents, criminals and degenerates.

ERYTHEMA NODOSUM IN CHILDREN.

Dr. Isaac A. Abt, of Chicago, presented this paper. He stated that modern dermatologists differed among themselves as to the relation of erythema multiforme and erythema nodosum. The disease undoubtedly belonged to or was to be classified as one of the exanthematous fevers. The patients were for the most part children, ranging in age from two to fourteen years. The disease usually began with vague pains, gastrointestinal disturbance and fever. The temperature was usually continuous, the disease rarely running its course without some fever. The fever in some cases was remittent and usually fell by lysis. Its duration was from two to seven days, while in the relapsing cases it sometimes lasted two or three weeks. The eruption generally occurred in the form of node-like swellings, most frequently located on the shin-bones; in some cases on the forearms and thighs; rarely on the tongue and face. The lesions were round or oval in shape, varying in size from that of a walnut to a hen's egg. They were at first painful and tender to the touch, and tense and firm in consistence. They did not produce itching, nor tend to suppurate. They were of a bright red color and the overlying skin was tense and glossy, as though it had been polished. In their involution, the changes resembled those observed in a bruise, and it might take a week or ten days for a single nodule to go through its cycle.

WHOOPING-COUGH: A STUDY OF EIGHTEEN CASES TREATED WITH THE ELASTIC ABDOMINAL BELT.

Dr. Theron W. Kilmer, of New York City, read the paper. The method consisted in the application of a slightly constricted silk elastic abdominal belt. A stockinette band was applied in the same manner as was done by orthopedists before applying the plaster of Paris jacket. This band extended from the axillæ to the pubes, and fitted snugly. Two muslin shoulder straps were used to prevent the band from slipping down. Upon this stockinette a single width of silk elastic bandage was sewn, extending entirely around the body and covering the abdomen. In a child under a year old, it was found necessary to use but one width (five inches) of the elastic bandage; in an older child, two widths would often be found necessary to entirely cover the abdomen. This silk elastic bandage was pinned in place while very slightly on the stretch. After it had been pinned in place, it was sewn to the stockinette band underlying it, all around its entire edge. The lower projecting portion of the stockinette band was pinned down to the outside of the diaper or other clothing, thus keeping the elastic belt smooth over the abdomen. Dr. Kilmer said he had used this belt with great success to control the obstinate vomiting of pertussis. In some of the most aggravated cases the vomiting stopped at once with the application of the belt.

THE CHAIRMAN, DR. KERLEY, thought the method was particularly valuable in very young children, in whom medication was rather difficult, because of the severe remedies that were necessary in whooping-cough—severe on account of their effect on the mucous membrane of the stomach in those patients of tender age.

DR. R. B. GILBERT, of Louisville, Ky., asked if there was any danger of hernia as a result of the tight constriction of the chest and abdomen?

DR. J. F. BIGONY, of Hinton, W. Va., referred to the method of relieving the paroxysms by a constriction about the head and underneath the jaw.

DR. KILMER, in closing, said he had never seen a hernia result from the application of the belt. In reply to a question as to the *rationale* of the method, he said he was inclined to believe that it was purely mechanical. In the cases reported, no other treatment but the belt had been used.

PROPHYLAXIS OF TUBERCULOSIS IN CHILDREN.

DR. LOUIS FISCHER, of New York City, read this paper. A study of 5,000 cases from the children's service of a large outdoor dispensary of New York City formed the basis of the investigation.

These children were brought to the writer for the treatment of various infantile disorders. They were examined for the presence or absence of pulmonary lesions with especial reference to tuberculosis. Out of 5,000 cases, 4,900 showed no sign of pulmonary disease; 1,700 suffered with adenoids, pharyngeal disease, and catarrh of the nasopharyngeal tract; 59 cases showed distinct evidence of pulmonary tuberculosis; 9 cases of this whole number showed tubercle bacilli in the sputum.

Of the 59 cases that showed evidence of pulmonary tuberculosis 43 had bone or joint tubercular disease; 5 had Pott's disease in addition to the pulmonary manifestation. The children chosen ranged from birth to ten years inclusive.

Method of Feeding.—Of the 59 tubercular cases, 2 were breast-fed. Their mothers were very anemic and dyspeptic, and suffered from general malnutrition. Thirty-seven of these cases were bottle-fed, the food consisting of grocer's milk. Eighteen cases were fed on condensed milk exclusively; 2 were fed on modified cow's milk.

The writer emphasizes the necessity for the treatment of children having mechanical impediments such as adenoids, or enlarged tonsils in the upper respiratory tract. He dwelt upon anatomical deformities such as pigeon breast being caused by improper oxygenation of the lungs.

The mortality of infants fed on cow's milk and relative absence of tuberculosis in breast-fed children is worth noting. Although living in densely populated districts, breast milk seems to give children a healthy foundation and relative immunity.

His conclusions are that we have two prophylactic measures for infantile tuberculosis, they are:—(1) Breast milk; (2) fresh air. The serum of breast milk contains an immunizing substance which accounts for the rarity of infectious diseases in the new born.

DR. A. JACOBI, of New York City, said that if the mother was tubercular, he would forbid her to nurse the baby, not, perhaps, because he believed that her milk was very dangerous, but because, by nursing that child, holding it in her lap and putting it to the breast, there was a distinct danger of its becoming infected through the sputum. He did not wish to be understood, however, that he excluded the possibility or even the probability of the milk being directly dangerous to the child. The milk of a single tubercular cow was undoubtedly dangerous; the milk of a tubercular cow that formed one of a herd of thirty or more was much safer. It had been shown that tubercular milk, when diluted to a sufficient degree, became innocuous.

DR. W. B. ULRICH, of Chester, Pa., said he agreed with Dr. Jacobi that tuberculosis, *per se,* was not transmitted from parent to child, but the tendency or diathesis was transmitted, and in those cases tuberculosis developed upon slight provocation. Prophylactic treatment should be in the direction of reforming or controlling the marriages of the world. While a child should be removed from a tubercular mother, it was better still that there should be no children with tubercular mothers. The speaker thought that one of the most fruitful sources of trouble in children was overfeeding.

DR. CHARLES G. BROWNING, of Highland, Cal., said that in a series of autopsies recently held, including a large number of hospital cases, less than one-tenth of 1 per cent. of the deaths previous to the first month of life were due to tuberculosis. The percentage of deaths from this cause increased rapidly with the third month until about the eighteenth month. The manner of infection was probably largely due to the inhalation of tubercle bacilli through the mouth. The practice of allowing infants to crawl about on dirty floors should be discouraged.

DR. PAULUS A. IRVING, of Richmond, Va., spoke of an infant asylum in the South where twenty-nine out of thirty inmates died in the course of a year. The cause of the high mortality was vainly sought for. Finally it was discovered that the cow that supplied the institution with milk was tubercular. This the speaker regarded as pretty strong evidence of the transmission of bovine tuberculosis to the human family.

DR. FISCHER, in closing the discussion, said he thought a tubercular mother should not only be isolated from her healthy child, but also from her husband and from everyone else who was receptive to tuberculosis, which he believed we all were. As to whether bovine tuberculosis was transmissible to the human, he thought we were not yet prepared to answer that question. He did not believe we could prove today that milk alone was a causative factor of tuberculosis. There were other conditions that predisposed to infection.

Second Day, Wednesday, June 8th.

HOW TO PRODUCE THE BEST MILK FOR ARTIFICIAL INFANT FEEDING.

Dr. Edward F. Brush, of Mt. Vernon, N. Y., read the paper. The author stated that many infants must be nourished artificially. The reasons for this were plain. Sometimes the mother was overworked, insufficiently nourished, harassed by a vicious husband, and many other children; often incompetent by her own vicious appetite or unfortunate temper; sometimes by inability to secrete milk. The business of properly nourishing an infant was a serious one, and had to be attended to with an intense desire of duty. The mother must be healthy, love her child, and not nurse it when she was seriously disturbed, either mentally or physically.

That the bovine race was notoriously prone to tuberculosis and other forms of chronic disease was admitted, and the better the breed from the dairyman's point of view, the more numerously were they afflicted by chronic disease. Therefore, the first and most important consideration in reforming the methods of supplying the milk for infant food began with the breeding. The cow supplying milk for infants should be bred from rugged animals, not closely related; she should be quiet in disposition and perfectly sound in health; she should be comparatively well nourished; that is, not excessively fat nor emaciated. The cow was man's forager and nurse, and if he attended to her properly, she was the best of his food producers, but she would surely furnish poison for him as easily as good food, if he himself did not understand how to prevent her from doing so. Dr. Brush expressed the opinion that the wealthy amateur dairyman did as much harm, if not more, than the careless, poor owner of dairy cows. Dirt that was not pathogenic was far less injurious than milk from perturbed or nervous cows. The periodical injection of tuberculin must be disturbing. The effort to maintain a herd of aristocratic highly-bred Jerseys might do well for a butter herd, but they were dangerous for the purpose of supplying milk for babies. Good cow's milk would nourish the infant without the intervention of the chemist, while bad milk would kill in spite of the men who knew how to modify milk according to the most approved method. The surest test of the milk was the baby itself. The percentages of fat, the proportions of proteids and all the other chemical data amounted to nothing; if the baby was thriving, the milk was good.

THE INITIAL CONTAMINATION OF DAIRY MILK.

Dr. Richard Cole Newton, of Montclair, N. J., read this paper. He stated that it had hitherto been supposed that milk, while in the cow's udder, was sterile, and that the bacterial content of the market product could be reduced to zero if infection of the milk after it left the udder could be prevented. Conn and others, however, had been unable to produce sterile milk, although every possible precaution had been taken in milking and in handling the milk. From time immemorial, milk had been subjected to a process of straining sooner or later after the conclusion of the milking, and for many years, metallic strainers had been used for that purpose. It had been demonstrated, however, that milk put through such strainers underwent little improvement, excepting that it was freed from pieces of hay, straw, hair and such larger objects, but its keeping qualities from its bacterial content were not improved. Besides this, much visible dirt was left in milk that had been strained in the ordinary way. Of this dirt, a large proportion was cow dung, which was very soluble in warm milk, so that a considerable portion finding its way into the milk was quickly dissolved, and could not be removed by subsequent straining. For the purpose of obtaining greater cleanliness, Professor Conn devised a covered milk-pail, with a piece of gauze or cheese-cloth stretched over a small opening in the cover. This pail answered its purpose very well. By its use, Conn and his colleagues at the Storr's Experimental Station, were able to exclude 66 per cent. of the initial contamination of milk by dirt, with very great improvement in its character and keeping qualities. The apparatus had been further simplified so that now there were only three pieces to the entire mechanism, namely, the pail, the cover and the sterilized cheese-cloth. Any farmer could buy an Arnold's sterilizer, a few bolts of cheese-cloth and one or more covered pails, and by using a sufficient amount of ice could send milk to the market with a bacterial content of less than 30,000 per cc. No soap of any kind should be used in washing the cheese-cloth, which should be boiled with ordinary soda or some alkaline powder.

Dr. J. P. Crozer Griffith, of Philadelphia, said the papers of Drs. Brush and Newton were in thorough accord with the trend of the modern scientific study of milk, and certainly with the experience of those who had to do with the artificial feeding of infants. The great object to be sought for was to get pure milk.

Sterilization and pasteurization, good as they were, were only resorted to because we knew of nothing better to do under the circumstances.

Dr. F. L. Smith, of Bridgeport, Conn., spoke of the contamination of the milk in the feeding of the cow. He mentioned an instance where infants developed cholera infantum as the result of drinking milk from cows that had broken into the cornfield and made a hearty meal of green corn. In another case the milk became unfit to drink because the cows had been fed on oat straw containing a little wild mustard. Turnips and turnip-tips would also impart a strong flavor to the milk. The milk of cows was readily affected by the food they ate. Jersey cows were especially susceptible in that respect.

Dr. L. C. Ager, of Brooklyn, N. Y., spoke of eliminating one possible source of contamination in the handling of the milk by having it bottled at the farm instead of at the creamery.

Dr. Thomas S. Southworth, of New York City, said that everyone was in accord with the fact that pure milk was of the highest importance. The gross chemistry of milk was fairly well understood, but the finer points, the exact adjustment of the milk to the child had not yet been worked out. The view was no longer held that cow's milk could be made the equivalent of breast milk. Breast milk was a fluid that was formed by the human mother for the human child, and when the child was taken from the breast and put upon artificial food, the condition could be fairly called a pathological one.

Dr. W. D. Schwartz, of Portland, Ind., called attention to the danger of large sized nursing bottles, with the nipple attached to a long rubber tube.

Dr. John Lovett Morse, of Boston, said that while the subject of securing pure milk was of the first importance, the value of properly modified milk should not be lost sight of. Most babies would not thrive on unmodified cow's milk, even if it was pure.

CHRONIC CONSTIPATION IN THE INFANT.

Dr. J. Ross Snyder, of Birmingham, Ala., read this paper. He stated that complete digestion embraced a three-fold function, conversion, absorption and evacuation. There was a conversion and absorption of the nutrient elements of the food, and following this, an evacuation of the refuse. The successful performance of these several divisions of the digestive functions was dependent on each other, the character of the food ingested, and on certain secretions and motions of the organs involved. There were certain anatomical differences in the digestive tract of the infant that were usually regarded as predisposing to constipation. The intestinal canal was relatively longer in the infant than in the adult. It contained a larger number of loops and coils, and its calibre was relatively smaller. The peristaltic movements were slight, because the muscular structure was undeveloped. The walls generally were thinner and weaker in the infant than in the adult.

Because a great many constipated mothers had constipated babies, some seemed to regard this as another expression of hereditary influence. Constipation in the mother, however, or its causes, will produce just the changes in her milk that render it constipating of itself. So far as the infant was concerned, the real causes of constipation were to be found only in the errors of hygiene or of the diet. Overcrowding, lack of sunshine, lack of fresh air might so interfere with the digestive process and with the normal development of the child, that irreparable injuries were produced.

Treatment.—If the disorder resulted from unhygienic conditions, no amount of castoria or castor-oil or of nux vomica would better those conditions in the least. If the diet was too rich in proteids, the most liberal administration of salts, of suppositories or enemas would not lessen the percentage of those proteids by the smallest part of a fraction. The treatment of constipation was not difficult if the condition was interfered with early, and dealt with intelligently. A knowledge of the relationship between the feces and the ingesta was pre-requisite. General directions, such as were found in some text-books, for the use of cream, oatmeal, etc., were misleading. Primarily, the cause of the condition should be found, and no routine method of treatment would prove satisfactory. The cause, when found, suggested its own correction. If, however, the condition was neglected while the child was yet a young infant, the treatment became an altogether different and more difficult question. If the constipation was not of very long standing, atony of the bowel might be overcome by correcting the diet and by endeavoring to establish habit. The insertion of an ordinary clinical thermometer, well vaselined, while the child was in posture, often proved successful. Soap and glycerine suppositories were to be avoided, if possible. Massage should never be practised on the young.

Dr. Isaac A. Abt, of Chicago, said that while the administration of fats was generally regarded as beneficial in constipation, it had been shown that in some cases, the use of over-fatted food, especially cream, had led to the formation of scybala and an aggravation of the trouble.

THE EFFECT ON THE NERVOUS SYSTEM OF CHILDREN OF UNCORRECTED REFRACTIVE ERRORS AND MUSCULAR IMBALANCE.

Dr. J. H. Claiborne, of New York City, read this paper. The author's conclusions were as follows:—(1) Nervous symptoms of a variety of kinds occurred as the result of eye-strain. (2) Eye-strain was due to refraction errors, the imbalance of the external ocular muscular system, or, more frequently, to a combination of the two. (3) Of these two, the refractive errors were by far the more frequent cause. (4) Muscular imbalance alone might cause it. (5) Headache was by far the most common nervous symptom in children caused by eye-strain. (6) The headache was chronic, or induced directly by near work, and was generally in the forehead or temples. (7) Migraine or hemicrania due to eye-strain was comparatively rare in children. (8) Any nervous symptom in children should arouse the suspicion of ocular defects, either as a direct or a contributing cause. (9) The refractive correction should be made under atropin. (10) Muscular defects were secondary to the refractive, and should be corrected only in certain cases.

CONGENITAL OCCLUSION OF THE LACHRYMAL CANAL, AND ACUTE CONTAGIOUS INFLAMMATION OF THE CONJUNCTIVA OCCURRING IN CHILDREN.

Dr. John E. Weeks, of New York City, read this paper. The author discussed in a general manner the acute contagious inflammations of the conjunctiva, as seen in children, and referred briefly to congenital occlusion of the lachrymal canal. The latter condition was often mistaken for acute conjunctivitis, and it required careful observation to avoid confounding the two. Dr. Weeks said that the acute contagious ophthalmias to which children were subject were those that developed as a consequence of infection from the pneumococcus, the Koch-Weeks bacillus, the gonococcus and the Klebs-Löffler bacillus. The clinical picture as the result of infection from the first two microorganisms mentioned was that of a mucopurulent conjunctivitis. A pneumococcus conjunctivitis was indistinguishable, clinically, from a Koch-Weeks bacillus conjunctivitis. Acute mucopurulent conjunctivitis due to the pneumococcus or to the small bacillus was devoid of danger to vision, excepting in an extremely small percentage of cases, while gonorrhea and diphtheria might cause great damage to vision in a large percentage of cases. For this reason, the true diagnosis was important, and if any uncertainty existed regarding it, a microscopical examination of the secretion should be made. The remainder of Dr. Weeks' paper was devoted to a discussion of the treatment of these various forms of conjunctival inflammation.

DR. ARTHUR G. BENNETT, of Buffalo, said that an examination of the eyes of the pupils at the truant school in Buffalo had disclosed the fact that a great majority of the children had marked defects of vision. Many of them were markedly benefited by the application of proper glasses.

DR. HERMAN JARECKY, of New York City, said that in his work at the Manhattan Eye and Ear Hospital and the Sydenham Dispensary, quite a large number of cases of chorea in children had been under observation for a long time, and he could not recall a single instance in which the chorea was cured by correcting the eye errors. In chorea there was apparently a muscular imbalance of the whole system of which the eye condition was only a part.

ENURESIS.

DRS. MAURICE OSTHEIMER AND I. VALENTINE LEVI, of Philadelphia, presented this paper. The writers stated that during the past five years, among 1,657 patients treated at the Children's Dispensary, of the University Hospital in Philadelphia, they had met with 90 cases of enuresis. This showed the comparative frequency of this condition in children. Among these 90 cases, the enuresis was nocturnal in 53, diurnal in 2, and both nocturnal and diurnal in 35. While there was no one cause of enuresis, reduced tone of the vesical sphincter muscle was present in most cases. This was often the result of some antecedent or simultaneous disease. Among the many methods of treatment, they found that in the vast majority of cases, recovery followed the use of the tincture of belladonna in ascending doses, in the mild cases; and atropin and strychnin in the intractable cases. The treatment of the latter class of cases was begun with atropin, gr. 1-240th, and strychnin, gr. 1-480th, to one drop of water, and gradually increased until incontinence ceased. The highest dose was continued for from two to four weeks and then gradually decreased, so that the entire treatment usually covered from six weeks to three or four months.

In every case, errors of diet were corrected. Tea, coffee, fresh bread, cake and fried things were forbidden absolutely. Nothing was allowed between meals excepting milk. No liquids were permitted after supper, and fluid taken with meals was limited to one or two glasses. Cold sponge baths of two minutes' duration, followed by rubbing the entire body with a Turkish towel were ordered daily upon rising. Associated conditions, such as gastroenteritis, nasopharyngeal catarrh, adenitis, otitis, tonsillitis, worms, etc., were given special attention. If analysis of the urine showed hyperacidity, potassium citrate was given. In boys, the foreskin was stripped back early and adhesions freed, when this was possible; otherwise, circumcision was advised. In every case in which the presence of a vesical calculus was suspected, skiagraphs were made or sounds introduced. No calculus was discovered among the 90 cases.

Dr. Edwin E. Graham, of Philadelphia, said that in the treatment of enuresis, much stress should be laid on the fact that it must be continued for a long time. Many of these patients drifted from one clinic to another, and the treatment was not systematically carried out.

THE BACTERIOLOGY OF SUMMER DIARRHEA.

Dr. William H. Park, of New York City, read this paper. The writer stated that the intestines were the only organs of the body which contained large amounts of fermenting and decomposing material. The bacteria contained in the intestinal contents numbered many billions, and far exceeded in number those contained in all the other cavities of the body put together. The bacteria of the intestines were constantly engaged in fermentative and putrefactive processes which exerted a very important influence on the organism of the body. The bacteria of no other body cavity had this function.

The intestines of the new-born were usually free from bacteria, but within a few hours after birth they became infected from the mouth and anus. Within a few weeks, bacilli of the colon group were always present, and usually varieties of streptococci and staphylococci, hay bacilli and allied groups. The intestinal evacuations of the child contained a daily average of fully one billion of bacteria. The study of intestinal bacteria was very difficult. Excepting the lowest part of the rectum, we could not readily reach the intestinal mucous membrane during life. Furthermore, there was a striking similarity between the bacilli present in the normal intestine and those believed to be pathogenic. The common colon bacillus resembled in morphology, staining and colony appearance the various varieties of the colon group, as well as those of the dysentery bacillus, the para-colon group and the typhoid bacillus. The normal streptococcus and staphylococcus resembled those met with in acute disease, and the yeast forms appearing in health resembled the greater number appearing in disease. In hot climates, spirilla were frequently found in the intestines, and resembled very closely pathogenic forms and the true cholera organisms. The difficulties arising from these two facts were still further intensified by the probability that bacteria existing usually in the intestines as harmless refuse fermenters might under changed conditions excite disease.

A SUMMER'S EXPERIENCE WITH INFANTILE DYSENTERY.

Dr. J. H. Mason Knox, Jr., of Baltimore, read this paper. The term *dysenteria infantum,* or infantile dysentery, was employed to include all cases, mild or severe, of intestinal infection by the *bacillus dysenteriæ,* Shiga. During the summer of 1903, 43 cases of diarrhea in infants and young children, in which the dysentery bacillus was isolated by Bossath from the stools, were treated at the Thomas Wilson Sanitarium for Children, ten miles distant from Baltimore. A study of these cases showed that in their history, clinical manifestations and pathologic findings, they were identical with those observed during epidemics of diarrhea that had occurred for many years among infants in Baltimore and other American cities, and there was good reason for the belief that the dysentery bacillus was the important factor in this great scourge among children.

The disease usually began in June, reached its height in July and gradually declined in August, although sporadic cases occurred through the year. The number of cases appeared to be directly increased by the excessive hot weather. Children under one year were most susceptible; those over three years were rarely attacked. Nearly all cases occurred among infants artificially fed. Ill-nourished children, particularly those fed on condensed milk, were less able to withstand the infection of the dysentery bacillus, and formed a large proportion of the fatal cases. The cases could be readily divided into two groups; those in which the symptoms of toxemia were most prominent, and those in which there was evidence of a destructive lesion of the bowel. Mucus was noticed in the stools in all cases. Blood was present in the discharges in moderate amount in 42 per cent., and pus in 53 per cent. of all cases. Many of the deaths occurred late in the summer, in long-standing cases of ileocolitis, with ulcerated intestines. The key-note of the treatment was promptness. If the food could be stopped and the alimentary tract emptied within a few hours after the onset of the symptoms, most infections could be aborted. The results of the anti-dysenteric serum treatment were disappointing. Its use was perfectly harmless under aseptic precautions. The prophylactic injections of the serum in susceptible babies might prove an advisable procedure.

THE BACILLUS DYSENTERLÆ IN RELATION TO THE DIARRHEAL DISEASES OF INFANTS. A CLINICAL STUDY OF 237 CASES.

DR. L. EMMETT HOLT, of New York City, read this paper which contained the result of the use of the anti-dysenteric serum in 83 cases of intestinal infection by the *bacillus dysenteriæ,* Shiga, that had been studied under the direction of the Rockefeller Institute in various hospitals in New York, Boston, Philadelphia and Baltimore. Thirty-eight of these 83 cases resulted fatally. On the whole, the outcome of the serum treatment was disappointing, although no unfavorable symptoms followed its use in any case. In a few instances, an eruption, usually urticaria, followed the injections. That decided improvement appeared to follow its use in only 12 cases was not very encouraging, but several factors worked against its success. In a large proportion of the cases it was used late in the disease. Again, it was, as a rule, only used in the most severe cases; and finally, at the beginning of the season, no rules had been formulated as to the size and frequency of the dose. Hence it was evident that many of the doses were too small. Four patients were moribund at the time the serum was given. Of the 83 cases, 67 were hospital patients. The serum should be used early, before serious lesions had developed, or before the patient's general nutrition had become too profoundly impaired. The latter referred particularly to cases in young infants. Experience had shown that the serum must be used in repeated doses, one or two doses being given each day, and continued for several days if the attack be severe. The promising cases for future trial of the serum were those in which the attack was acute, with symptoms of a severe infection in infants or older children with some powers of resistance. In other words, in all patients where the real problem was to combat the infection and not to maintain the nutrition of the patients, which even before the infection might have been a matter of the greatest difficulty.

SOME FINDINGS IN SUMMER DIARRHEAS OF CHILDREN.

Dr. John J. Cook, of Chicago, reported 29 cases of diarrhea coming under his observation during July and August, 1903. The cases were reported in order to show the relative frequency of certain bacteria not ordinarily given prominence in this connection. Cultures were simultaneously made from the mouth and the fecal discharges, and observed as closely together as possible. Both in the oral secretions and in the feces, the bacillus pyocyaneus and mycoides were found in a number of cases.

THE MANAGEMENT OF SUMMER DIARRHEA.

Dr. Thomas S. Southworth, of New York City, after calling attention to the prominent etiological influence of high atmospheric temperature in the production of summer diarrhea emphasized the importance of prophylaxis, both dietetic and hygienic, and stated that it should be begun before the onset of the hot weather. The danger was chiefly in proportion to the artificial feeding. The greatest safety was secured by heating milk, however pure. Errors in diet, as well as bad milk, were the exciting causes, but local conditions and lesions, once started, were progressive, and intensified by milk diet. Toxemia was the prominent factor. The prompt elimination of the milk from the diet, and the evacuation of the bowels vastly reduced the mortality. Opium should be used with great care. True cholera infantum was a rare type.

Dr. J. P. Crozer Griffith, of Philadelphia, thought that the etiological relationship of the *bacillus dysenteriæ* to the various forms of diarrhea had not yet been proven, but this in no way deducted from the value of the investigations, which had not been completed nor gone far enough. The speaker said he was thoroughly in favor of the early withdrawal of the milk in all these cases, and he rather favored the water treatment, as advocated in France. Opium should not be used too early, nor too late; it required careful consideration in every case to know when to begin its use.

Dr. David E. English, of Millburn, N. J., said he strongly favored the starvation treatment of diarrhea. He withdrew the milk and substituted a weak solution of barley water, containing a pinch of salt.

Dr. R. B. Gilbert, of Louisville, Ky., said he was opposed to the use of opium in diarrhea. If an anodyne was needed, he much preferred hydrate of chloral. Flushing the colon with a strong saline solution usually relieved the pain and rendered the use of an anodyne unnecessary.

Dr. William L. Stowell, of New York City, said that at the Children's Hospital, Randall's Island, raw milk had been used at times during the past six years with very good success. It was neither sterilized nor pasteurized, excepting in extremely hot weather.

Third Day, Thursday, June 9th.

HEMATURIA AS THE EARLIEST OR ONLY SYMPTOM OF INFANTILE SCURVY.

Dr. John Lovett Morse, of Boston, reported a number of cases illustrating the fact that hematuria was a not uncommon symptom of infantile scurvy. Early writers on the subject had noted that it might be the earliest, and therefore, for a time, the only symptom. Scurvy was the most common cause of uncomplicated hematuria in infancy.

Dr. William L. Stowell, of New York City, said that a more systematic examination of the urine of young infants was very desirable. Hematuria in the adult might be caused by stone, but this was comparatively rare in infants, so it usually could be regarded as an accompaniment of blood disturbance. This entire subject was still very much confused. If there was a special germ or diathesis underlying the condition, it had not yet been found, nor had a special remedy been discovered. The speaker said his own impression was that it was due to a specific germ. At present, adrenalin seemed to give the best curative results.

Dr. H. M. McClanahan, of Omaha, said the important point in Dr. Morse's paper was that hematuria might be the first and only symptom of scurvy for a considerable time. Scurvy was readily cured, if recognized within a reasonable time, before secondary changes had taken place.

Dr. J. Ross Snyder, of Birmingham, Ala., called attention to the fact that this early and important symptom of scurvy had probably been frequently overlooked.

INTESTINAL OBSTRUCTION IN CHILDREN.

Dr. John F. Erdmann, of New York City, read this paper which embraced the chief symptomatic features of intussusception, strangulated hernia, post-operative bands and Meckel's diverticulum as causes of intestinal obstruction in children. The major part of the paper, however, was devoted to intussusception. This condition, barring a few accidental cases, was one that demanded prompt surgical interference. He was impressed more and more with the necessity of immediate operation in these cases, and not temporizing with air inflation or water injection.

The diagnosis of intussusception was not difficult, although the symptomatology, as given in the former text-books on diseases of children, etc., ought to be re-written with a view of placing all the stress upon the presence of blood or bloody mucus in the stools, and not upon the presence of a sausage-shaped tumor. In over 60 per cent. of a series of 28 cases seen by Dr. Erdmann, in 24 of which he operated, there was no tumor of any kind either palpable per rectum or through the abdominal wall. On the other hand, there was not a single acute case in which blood, or bloody mucus or serum was not found, either upon the diaper, in the commode, or expelled from the anus after digital examination.

Sudden pain was almost invariably the first symptom that the child manifested; then a degree of shock varying in intensity, and efforts at defecation took place. These were followed by manifestations of spasmodic pains; a peculiar whining cry or fits of crying. In the first hour or two the abdomen was lax, and no marked evidence of pain was produced by palpation. A tumor was not felt unless the intussusception was of considerable extent and was taking place rapidly. After a few hours, dependent upon the degree of obstruction, abdominal distension and evidence of complete obstruction occurred. Although some feces might be expelled with the bloody rectal contents, they were due entirely to the fact that these contents were below the point of obstruction. When a tumor was felt, it was not usually the proverbial sausage-shaped tumor, but was more apt to be round or nodulated, and moderately movable. There was usually an accelerated pulse and elevation of temperature from one to two and a half degrees. In the treatment of intussusception, rectal enemas during the first few hours were not productive of harm, and might, though rarely, be followed by reduction. This occurred but three times in 28 cases seen by the auther. Although these patients bore operative interference quite well, it was significant that his greatest mortality rate occurred in those cases which required the longest time for reduction. Chloroform was the anesthetic used in all his cases. The incision was invariably made in the middle third of the right rectus, and usually did not exceed two inches in length. Among his last 6 cases, operated on during the past fourteen months, there were two deaths. In one of these cases death was attributed to status lymphaticus, and in the other it followed an extensive excision of the ileum.

Dr. Isaac A. Abt, of Chicago, said that some cases of intestinal obstruction in children were of a paralytic nature occurring in the course of pneumonia or other systemic affection, or dependent on the ingestion of certain kinds of food producing ptomaine poisoning and intestinal infection. The speaker said he did not believe that such cases could be benefited by surgical intervention.

Dr. Louis Fischer, of New York City, said the results of operations on children for the relief of intestinal obstruction that he had seen had not been as good as those reported by Dr. Erdmann, and his experience had impressed him with the belief that children did not bear laparotomy well. He could recall at least 6 cases in which laparotomy was done with fatal result.

Dr. S. W. Kelley, of Cleveland, said that the injection or inflation method of reducing intussusception, if properly done, was useful in certain cases. Spontaneous reduction occasionally occurred under the use of opium; the drug should only be used early in the attack, and was not to be depended upon. The consent of the parents could not always be obtained to a laparotomy. One objection to the use of air was that it was difficult to gauge the pressure. He had overcome this difficulty to some extent by first introducing air and then water, which could be more easily handled, and by which the air pressure was regulated. He thought a pressure of four or five pounds was sufficient, and this should be kept up for a period of from fifteen to twenty-five minutes. He considered this more effective than a higher pressure kept up for a shorter time.

DR. SAMUEL McC. HAMILL, of Philadelphia, said it had been shown experimentally that irritation of the rectum produced reversed peristalsis, and this might have some bearing on the spontaneous reduction occurring in some cases of intussusception.

DR. A. JACOBI said that the reversed peristaltic wave would probably be interrupted at the point of intussusception.

DR. JOHN LOVETT MORSE said that their experience at the Infant's Hospital in Boston indicated that babies bore not only laparotomies but other severe operations well, providing they were kept warm during the operation.

PERINEPHRITIS IN CHILDREN.

DR. WISNER R. TOWNSEND, of New York City, stated that the term perinephritis had been used by most writers to describe an inflammation in the tissues surrounding the kidney. Some would limit it to those cases where the disease originated in the fibrous sheath of the kidney. When it began in the fatty tissue, they preferred the term paranephritis or epinephritis.

Perinephritis was not of frequent occurrence. Nieden, in 1897, could only find records of 166 cases. Of these, 23 were under fifteen years of age, the youngest being five weeks old. Gibney, in 1876, reported 9 cases, and in 1880 increased the total to 28. The ages ranged from eighteen months to fifteen years. In 16 cases there was suppuration; in 12 no suppuration. In 19 no cause was found.

DR. TOWNSEND reported 6 cases of perinephritis in children seen at the Hospital for the Relief of the Ruptured and Crippled during the years 1894-1903. In no instance in the 6 cases was a correct diagnosis made by the attending physician who first saw the patients; all were sent to the clinic to have either spinal or hip braces applied. Gibney and others state that an erroneous diagnosis was made in over 50 per cent. of the cases seen.

Only in rare instances should any difficulty arise in correctly interpreting the symptoms in a case of beginning perinephritis. After an abscess had formed, the diagnosis was usually easily made. In most instances, the etiology was obscure, but in many a definite cause was supposed to exist. Exposure to cold, a strain or sprain, a blow, a wound or fall on the side, constipation, excessive exercise of any kind, jarring of the body, over-exertion, etc., were among the causes that had been held to produce primary perinephritis. The secondary form might follow infection of any part of the body, and had been seen in all forms of kidney lesion, especially in pyonephrosis, pyelitis and stone in the kidney, and after operations on the kidney, ureter, bladder or urethra. It might follow or occur in typhoid and other fevers, in pneumonia, empyema, pleurisy, after ulceration of a stone through the gall-bladder, or the rupture of an echinococcus cyst.

The first symptom of a primary perinephritis was usually pain, which might be very severe in character. It was most frequently felt in the region of the kidney, near the vertebra. It might be mistaken for neuralgia or lumbago, or extend downward and simulate sciatica. As movements of the body tended to aggravate the pain, the spine was generally held rigid, and it was due to this fact that so many of these cases were mistaken for Pott's disease. When psoas contraction occurred, either before or after an abscess had formed, flexion of the thigh resulted, and attempts to straighten the lower extremity caused pain, due to tension on this muscle; this pain might be referred to the hip, spine or pelvis. As the disease was of an inflammatory type, chills or rigors, followed by fever and septic temperature were among the first symptoms, and were often severe in character. Constipation was the rule, and its causation was variously ascribed to the patient's desire to avoid pain by moving the body, the pressure from the abscess on the intestinal tract, or the pressure on the sympathetic nerves.

The treatment of perinephritis should be based on the conditions met with. If seen early, rest in bed, tonics, laxatives and mild stimulation were indicated. After an abscess had formed. prompt surgical interference was demanded.

Dr. Jacobi said that constipation was not only a symptom of perinephritis, but also an important factor in its causation, both in the child and the adult. In the latter, the constipation was generally severe and of many years standing. He could recall only 4 cases of perinephritis in children.

DIAGNOSIS OF ENLARGED BRONCHIAL LYMPH NODES IN CHILDREN.

Dr. Alfred Friedlander, of Cincinnati, stated that among the phenomena of the developmental period of childhood, there was none more striking, perhaps, than the activity of the lymphatic system. The lymphatic glands constituted an apparatus for filtration. Given the factors of rapid growth on one hand, and of poorly developed powers of resistance on the other, it could readily be seen that the period of childhood must necessarily be accompanied by marked reactive irritation and inflammation of the entire glandular system. During this period, the mucous membranes were prone to irritation, with resulting inflammation. This, together with faulty conditions of hygiene and development, not infrequently taxed the filtration system to its utmost capacity. From the nature of things, we should expect to find inflammation of the tracheo-bronchial glands to be enormously common. The three groups of these glands, the tracheal, the tracheo-bronchial and the peribronchial intercommunicated freely; they receive the lymphatics of the trachea and bronchi, the lungs and the pluræ, and are directly connected with the mesenteric lymphatic nodes. Simple adenitis of the glands was very frequently only the precursor of a far more serious tubercular involvement. There could be no doubt that many cases of enlarged bronchial glands tended to recovery, without subsequent tubercular infection, but the danger of such infection was always present.

One of the early symptoms suggestive of enlarged bronchial glands was a peculiar, paroxysmal cough. This cough resembled that of pertussis, excepting that there was no crowing inspiration. The paroxysms were often very violent and exhausting, and might end in vomiting. The attacks occurred more frequently at night. Dyspnea on even slight exertion, without demonstrable cardiac lesion, was frequently present. The appetite was capricious; the child was not well nourished and usually anemic. There may or may not be an afternoon rise of temperature. Hoarseness, more or less constant, was often noted.

Dr. R. B. Gilbert, of Louisville, said that these bronchial lymph nodes were probably enlarged, to a greater or less extent, in every case of bronchitis, pneumonia and, especially, measles. In every case of persistent cough following measles, which was not relieved by the usual cough remedies, the speaker said he gave full doses of potassium iodid with excellent results. This condition was most often met with in patients with a syphilitic or scrofulous diathesis.

THE IMPORTANCE OF EARLY AURAL EXAMINATION IN ACUTE DISEASES OF CHILDREN.

Dr. James F. McKernon, of New York City, emphasized the importance of frequent otoscopic examinations during the acute diseases of childhood, so that the presence of any pathologic condition might be early recognized and treated. In young children suffering from the acute exanthemata, an aural complication should be looked for each day. In a large number of cases there was no symptom pointing to an aural condition until after the damage had occurred; namely, a spontaneous rupture, with destruction of a portion of the drum membrane, which might easily have been avoided had otoscopy been practised frequently. Ear complications should also be looked for in acute gastrointestinal conditions, pneumonia, grippe, acute follicular tonsilitis and typhoid fever.

Dr. Herman Jerecky, of New York City, said that in connection with the acute exanthemata, children who suffered from adenoids were particularly liable to middle ear complications on account of the imperfect drainage. In typhoid fever, the aural condition was probably so frequently overlooked on account of the general apathetic condition of the patient.

Dr. Samuel Walker, of Chicago, said there was nothing more important in the treatment of children than the routine and thorough examination of the ears. Otitis media could simulate almost any disease of childhood.

Dr. Samuel McC. Hamill, of Philadelphia, said that among 7 cases of typhoid fever in his wards at the hospital, 3 were complicated by otitis media.

Dr. Louis Fischer, of New York City, said that in his experience, the temperature in connection with middle ear suppuration, especially when occurring in the course of the acute infectious diseases, was peculiar, and a rather uncertain guide.

Dr. S. W. S. Toms, of Nyack, N. Y., reported an instance where cleansing the nose of a child that was suffering from purulent rhinitis was followed by double otitis media.

Dr. Thomas S. Southworth, of New York City, thought that a certain number of patients with infectious diseases would develop an otitis media, whether the nose was irrigated or not. The number would probably be reduced rather than increased by carefully cleansing the nasopharynx, where absorption of infectious material was so apt to occur.

Dr. McKernon, in closing, said he never used a spray or douche in the nose or nasopharynx. He advocated paracentesis in every case of bulging of the drum, and in a certain number of cases he would make the incision without waiting for the bulging.

SOME PHYSICAL SIGNS IN INFANTS AND CHILDREN NOT SUFFICIENTLY EMPHASIZED.

Drs. Samuel McClintock Hamill and Theo. Le Boutillier, of Philadelphia, presented this paper, which contained the results of a systematic examination of the hearts and lungs of infants in the Out-Patient Department of the Howard and Polyclinic Hospitals, of Philadelphia, and showed important variations in the anatomical structures in the child as compared with those in the adult.

THE MANAGEMENT OF HERNIA IN INFANCY AND CHILDHOOD, WITH RESULTS OF OPERATIVE TREATMENT.

Dr. William B. Coley, of New York City, expressed the opinion that in the treatment of hernia in infancy and childhood, the truss should be tried up to four years of age, and rarely after that. It should be put on as soon as the hernia was discovered, and worn day and night. In cases which the truss failed to correct, or where strangulation occurred, or where the hernia was irreducible or associated with hydrocele, an operation should not be delayed. Dr. Coley said he invariably chose the Bassini operation, using kangaroo absorbable sutures and doing a transplantation of the cord. Before 1896, which was prior to the use of rubber gloves, suppuration occurred in 4 per cent. of his cases: since that time it had been less than 1 per cent.

CHOREA.

Dr. W. C. Hollopeter, of Philadelphia, read this paper. The treatment of chorea the author had found most satisfactory was the hydropathic, which he described as follows:—The child was placed in a bath at a temperature that would prove no shock nor surprise to it; from 90 to 98° F. was usually satisfactory. The bath could be prolonged for one or two hours, and given twice daily, the whole body being submerged excepting the head and neck. At least ten minutes of the time could be profitably devoted to gentle, superficial massage of the arms, legs and trunk. Dr. Hollopeter said he had treated 40 or 50 cases by this method, with the result of shortening the duration of the attacks from three months to six weeks.

DISEASES OF CHILDREN OCCASIONED BY AFFECTIONS OF THE NOSE: THE NECESSITY FOR RECOGNITION AND TREATMENT.

Dr. Louis J. Lautenbach, of Philadelphia, stated that children were great sufferers from obstructions of the nostrils. They were very prone to diseased conditions affecting the nose, and occluding the passageway. The mischief thus occasioned was common, and unfortunately often very serious to the life of the child, as well as to its health. Along the respiratory apparatus, tonsilitis, pharyngitis, laryngitis, and particularly bronchitis and pneumonia, were commonly so caused—in great part by the mouth breathing. Stomach and intestinal disorders were frequent results of nasal disease. Nervous affections, and lack of mental and physical development were by no means unusual. General lack of vitality and that indefinable something called a general cold were frequent resultants. Lack of development of the dental arches and irregularities in tooth formation, as well as placement, could very often be traced directly to nasal disease; the widespread mischief thus caused lasting often throughout life. An impartial, unbiased examination would nearly always develop a satisfactory diagnosis. The connection between the secondary conditions and the primary cause might not at first be clear, but when once understood, the local and general treatment could generally be instituted harmoniously, and the effective results would more than repay for the difficulties encountered. Fortunately, nasal troubles in children were easily cured, as a rule.

A STUDY OF A CASE CONJOINING MYXEDEMA AND DIABETES MELLITUS.

Dr. August Adrian Strasser, of Arlington, N. J., reported the case.

The following officers of the section were elected for the ensuing year:—Chairman, Dr. John Lovett Morse, of Boston; vice-chairman, Dr. William E. Darnell, of Atlantic City; secretary, Dr. J. Ross Snyder, of Birmingham, Ala.; member of the house of delegates, Dr. W. C. Hollopeter, of Philadelphia.

Laryngeal Spasm and Pseudomeningitis from Ascaris Lumbricoides.—Two interesting cases are reported by G. Pierantoni (*Gazz. Osped.*, May 31, 1903), the first presenting the symptoms of laryngeal stenosis, the second those of meningitis. In the first, pupillary mydriasis suggested the presence of ascarides, and upon administration of santonin and calomel followed by rectal injection, there occurred emission of ten ascarides, after which there was a complete subsidence of dyspnea, and no return of the spasmodic laryngeal attacks. The second case presented a perfect clinical picture of meningitis, though no focus of infection could be discovered. It was thought that the trouble might be attributable to autointoxication from the gastroenteritis present, possibly combined with helminthiasis. Again administration of santonin and calomel was followed by emission of numerous ascarides and subsidence of symptoms. The author emphasizes the value of mydriasis as an indication of the presence of ascarides. Of special significance was this symptom in the second case, as it was present in the period of excitation at which time myosis is seen in true meningitis. Pierantoni believes with Dematteis, who caused the death of rabbits by injection of an extract of *Ascaris lumbricoides* and reported the pathological findings in the animals postmortem, that these parasites secrete a toxic substance and to that are due the anemic and nervous symptoms seen in helminthiasis.—*Medical News.*

Current Literature.

PATHOLOGY.

Morison, Alexander: The Neural Factor in Heart Disease. (*Edinburgh Medical Journal*, March, 1904, p. 235.)

Among the 3 cases cited as showing the influence of the nervous system in cardiac disease, one was that of a girl who suffered from rheumatism when five years old. Two years later she was in the hospital because of fever and a mitral regurgitant lesion, remaining an in-patient for two weeks and then being treated as an out-patient with satisfactory progress for five weeks, when she developed marked tachycardia with the heart rate 200 to the minute and pulse not countable at the wrist. Re-entering the hospital there was temporary improvement in the tachycardia, the heart-beat falling to 100 and remaining at about this rate for ten days. Then edema and drowsiness supervened, the liver became enlarged, albumin appeared in the urine, the heart rate ranged from 160 to 100 and the child died, but without any signs of embolism.

At the necropsy there was no trace of recent inflammation of the endocardium or pericardium, though the latter contained 3 ounces of serous fluid. There were no pericardial adhesions. The left ventricle was hypertrophied and the anterior cusp of the mitral valve thickened; the left auricle was dilated, as was the right ventricle. On section the myocardium was apparently normal; microscopically the transverse striæ of the muscle fibres were less visible than usual, but no definite pathological condition. In some sections there was evidence of active interstitial hyperplasia in immediate relation to the trunks of cardiac nerves in the neighborhood of the right coronary artery.

Dr. Morison regards the escape of the heart from nerve control as having been due to the interstitial changes around the cardiac nerves rather than to the muscle changes.

Sobel, Jacob: Enlargement of the Phalanges in Rickets: A Report of Two Cases. (*Medical News*, February 13, 1904, p. 297.)

After referring to the few authorities who mention this deformity the author gives descriptions and photographs of his 2 cases. Neurath's radiographs showed that the thickening occurred at the middle of the shaft of the bones and not at the joint ends, so that each phalanx is spindle shaped; moreover the enlargement is periosteal. The condition is of interest on account of differential diagnosis from tuberculous and syphilitic dactylitis.

Couvelaire, M. A.: Congenital Cystic Degeneration of the Lung. Histogenesis of the Congenital Cystic Degenerations of the Glandular Organs (kidney, liver, pancreas, lung). (*Rev. Mens. des Mal. de l'Enf.*, February, 1904, p. 60.)

The case reported was that of a full term, apparently normal infant, which began on the fifth day to have attacks of cyanosis, with short rapid respiration in the intervals. The dyspnea increased so that the baby could not nurse, nor even swallow the breast milk from a cup. The infant died the following day, no diagnosis having been reached.

At the necropsy the middle lobe of the right lung was found so greatly enlarged as to hide the other two lobes, and to cover the heart which was pushed away over to the left. The upper and lower lobes of the right lung were atelectatic.

There were also numerous subpleural and visceral effusions of bloody fluid in these lobes. The surface of the enormous middle lobe was irregular and the border very thick; the pulmonary tissue crackled, but there were no emphysematous bullæ.

On section there were a great number of irregular cavities of varying size, the largest not over 1 cm. in diameter. These cavities were filled with air and their walls covered with a yellowish grumous substance.

The heart was large, with marked hypertrophy of the right ventricle.

Microscopically these cystic cavities were found to be lined with cuboid epithelia, and to communicate in places with tubular cavities lined with columnar epithelium and therefore adenomatous in character. In places the pulmonary tissue had its normal characters, but the intralobular bronchus was not recognizable, its lumen being irregular and showing diverticula, *i.e.,* bronchiectases. Other parts of this lobe were atelectatic.

Comparison is made between these congenital cystic degenerations and bronchiectases of the lung and the congenital cystic degeneration of the kidneys, liver, pancreas, etc. The process is regarded as similar in all cases, a perversion of development, an abnormality in the evolution of the epithelial cells of the canals and the mesodermic sheath of the canals which they line.

MEDICINE.

Sylvester, Charles P.: Typhoid Fever in Infancy, with Report of a Case Complicated with Meningitis: Recovery. (*Boston Medical and Surgical Journal,* March 24, 1904, p. *321.*)

The case reported occurred in a nursed infant of six months who probably contracted the disease from the mother, but did not develop symptoms until thirty-nine days after his last nursing. The onset was by nervous symptoms, pallor and a temperature of 104° F., pulse 165, respiration 44. The spleen was palpable, the head retracted, there were convulsive movements, and Kernig's sign was present. In a few days there were mucous râles in the smaller bronchi, and on the sixth day rose spots appeared. On the tenth day convulsions, hyperesthesia; on the eleventh day opisthotonus, irregular pulse and respiration. For two days there was coma, and there developed internal squint of right eye with unequal contracted pupils. On the eighteenth day the Widal reaction was positive, having been negative up to four days previous. No lumbar puncture was recorded.

The infant recovered completely upon symptomatic treatment, an ice compress being used around the head until nervous symptoms ceased, and oxygen inhalations being given with good effect during the cyanosis of the meningitis.

Koplik, Henry: The Clinical Features of Cerebrospinal Meningitis or Cerebrospinal Fever of the Epidemic Type. (*The Medical News,* June 4, 1904, p. 1,065.)

In this article is embodied the author's experience with 77 cases of meningitis, of which 37 were caused by the meningococcus intracellularis, and 35 were of the tuberculous form. No cases occurring during the epidemic of this year were included. Koplik follows Osler's classification and lays especial stress on the abrupt onset as one means of differentiating the epidemic from the other forms. Opisthotonus was present in 60 per cent. of the patients. The Babinski reflex he regards as a valuable additional symptom of tuberculous form, as it was present in 77 per cent. of these cases, and in only 16 per cent. of the epidemic form. He does not lay much stress on Kernig's sign, as pathognomonic of meningitis of any form. The epidemic form of disease was much more commonly associated with hyperesthesia and mental irritability.

McEwen's sign (percussion over the anterior horn of the lateral ventricle with the production of a hollow note), was more often elicited in the tuberculous form, seeming to show that in this type the lateral ventricles are easily distended with fluid, while in the epidemic form this sign was not obtained until late in the disease or not at all. Facial palsy was present in more than 50 per cent. of the tuberculous cases, rarely in the epidemic. The temperature curve in the cerebrospinal forms could not be considered characteristic and exhibited the greatest irregularities. An examination of the eyes showed in the majority of the patients suffering from cerebrospinal meningitis no change, while in 77 per cent. of the cases of tuberculous meningitis optic neuritis, papillitis or tubercles of the choroid were present. Important presumptive evidence of the nature of the meningitis is thus seen to be given by an examination of the fundus. A leukocyte count was made in every case, and in all of those of the epidemic form a certain amount of leukocytosis was present. "The leukocytosis was of the polynuclear type, the leukocytes ranging from 20,000 to 55,000, exceeding 25,000 to the cubic millimeter in fully 55 per cent. of the cases. The lowest leukocyte count in any case was 11,000 to 12,000." In the tuberculous forms a socalled leucopenia was not always found. "On the contrary, in fully 40 per cent. of the cases there was a leukocyte count of 20,000 to 25,000 to the cubic millimeter, and under 20,000 in 60 per cent. of the cases." In the socalled basic cases of the cerebrospinal form the count toward the close was often low (9,800 to 10,600) which still further increases the difficulty of differentiating them from tuberculous meningitis.

The greatest variation was found in the character of the cerebrospinal fluid obtained by lumbar puncture. In the epidemic form the fluid is rarely purulent, usually cloudy, but may be quite clear, and this last is especially true of the chronic cases that early in their course gave turbid fluid. The cloudy fluid is the most favorable fluid from which to obtain the diplococci either by smear or by culture, and two or more successful attempts to find them may be followed by unsuccessful ones, especially if the fluid has become clear. On the other hand, the fluid in 72 per cent. of the tuberculous cases was clear. Of 13 cases of the epidemic form in which the fluid was studied with reference to the cytology, 9 showed a preponderance of polynuclear leukocytes and 4 showed mononuclear cells as prevailing elements. In 15 cases of tuberculous meningitis studied with reference to the cell elements, 14 showed a prevalence of the mononuclear cells.

Complications were very few. Of the 37 cases of cerebrospinal meningitis the mortality was 35.6 per cent. Koplik considers lumbar puncture to be indicated for diagnosis, for frequent rigors, for high temperature, continued excessive irritability, stupor, constant headache and delirium. He does not consider it curative and relies on symptomatic treatment in addition to combat the disease.

Maguire, George J.: Acute Pemphigus in the Newly-Born; a Clinical Study. (*Brit. Jour. of Dermatology*, December, 1903, p. 427.)

After referring to the scanty literature in English about such epidemics, the author gives the record of 18 cases that occurred in September and October, 1902, among the out-patients of the Richmond Lying-in Charity. The epidemic was traced to infection by the midwife that had charge of the cases, and the vesicles or bullæ appeared usually on the third or fourth day. There were 8 fatal cases, a mortality of 44.4 per cent. In addition to the local lesions these patients had symptoms of acute toxemia following infection of the umbilicus. Other members of the family frequently suffered from the same bullous inflammation that was present in the newly-born.

The conclusions were as follows:—

(1) That the epidemic was one of the comparatively rare disease, pemphigus acutus neonatorum.

(2) That it was due to infection with a pathogenic organism, the staphylococcus pyogenes aureus, conveyed from case to case by a certain midwife.

(3) That though appearing chiefly in the newly-born and only fatal to these, it also attacked older children and adults.

(4) That it was characterized by a bullous eruption on the skin, variable in distribution and extent, the specific micro-organism being found in the contents of the vesicles.

(5) That in many of the cases no symptoms other than the skin eruption were manifested, but that a certain group of cases

showed grave symptoms of a general infection, and invariably ended fatally.

(6) That the point at which the systemic invasion arose in these fatal cases was the unhealed umbilical scar.

(7) That the treatment to all appearances had little or no effect upon the course and duration of the disease, whatever the result.

Squires, G. W.: A New Sign of Basilar Meningitis. (*Medical Record,* March 26, 1904, p. 496.)

A sign which was invariably found by the author in this disease, frequently so early as the fourth or fifth day, according to the severity of attack, is a rhythmical dilatation and contraction of the pupil. The method of obtaining the sign is as follows:—Place the child's head between the knees of the physician face upward, with the body of the child supported on the bed, table, or lap of the nurse. Grasp the sides of the child's head with each hand and produce gradual and forcible extension of the head on the spinal column. As the head is brought back the pupils will be seen to dilate simultaneously with the commencement of extension, the more extreme the extension the more the dilatation. Upon flexion the pupils contract so that when the chin is forcibly brought to the manubrium the pupils are well closed up. This can be done several times a minute, and each time the pupillary phenomenon will be repeated. The dilated pupils, with extreme retraction of the head in the late stages of the disease, may be in some measure mechanical or hydrostatic from increased pressure by effusion on the nerve roots or centres at the base of the brain.

Carter, William Wesley: Thymic Tracheostenosis, with Report of a Fatal Case. (*Medical Record,* April 2, 1904. p. 529.)

A feeble infant, five weeks old, was brought for treatment of extreme dyspnea, which had been developing from birth. There was marked cyanosis, orthopnea and inability to nurse continuously; there was deep retraction of the soft parts of the thorax above and below, and a loud stridor made in the trachea. No adenoids or other respiratory obstruction being found tracheotomy was done at once. At the operation a mass of glandular tissue was met with which pushed the trachea so far back that incision was made just below the cricoid cartilage. The tube caused only temporary relief, and the stridor persisted until the child died thirty-six hours later. Enlargement of the wound permitted removal of the larynx, which was normal, and revealed an enormously hypertrophied thymus gland extending upward in the neck as high as the larynx.

In discussing the treatment of these patients, Carter refers to a case of Rehn in which the baby's life was saved by opening the mediastinum, drawing the thymus forward and stitching it to the tissue over the sternum.

SURGERY.

Brannan, John W.: Appendicitis in Children. (*Medical Record,* April 30, 1904, p. 685.)

The case reported is that of a boy, six years old, who had a tendency to constipation and who had pain, vomited some curdled milk shortly after supper. There was no tenderness; pulse 80, temperature 98.5° F. The boy had a restless night but no vomiting; in the morning the pulse was 120, temperature 100.5° F. During the day the bowels moved slightly and in the evening the pulse was 120, temperature 100.7° F.; there was no localized pain or tenderness and the abdomen was flat and soft. Calomel in divided doses was given, followed by a laxative; this produced four movements during the night and the boy was restless. There had been no vomiting for forty-eight hours; but in the morning the pulse was 126, temperature 100.6° F. During that day, the second after the onset, there developed gradually increasing pain and tenderness on the left side of the abdomen; in the evening the pulse was 126, the temperature 101.2° F.

The patient was delirious that night and in the morning there was marked rigidity of the abdomen, and general tenderness most marked in left iliac fossa. At no time was there special pain or tenderness over the appendix. A very dark fluid was vomited twice during the day, and laparotomy was performed that evening. General peritonitis arising from a ruptured suppurating appendix deep in the pelvis was the condition found. Vomiting supervened after the operation, decomposed blood being found in the ejecta, but the temperature fell to normal and the pulse to between 100 and 110. In spite of stomach washing the vomiting continued and on the fourth day after operation there was much pain in the umbilical region, the abdomen became distended and signs pointed to intestinal obstruction. The secondary operation disclosed some omentum wrapped around a coil of small intestine and a collection of pus on left side of abdomen. The boy died the following morning.

The writer comments on the small number of reported cases in young children, remarking that surgeons do not appear to think it worth while to record their cases, whereas the general practitioner should have it impressed on his mind that appendicitis does occur and is apt to be mistaken for other intestinal or even pulmonary conditions. The classical symptoms are apt to be lacking in children; most reliable are rigidity of the right rectus muscle, flexion of the thigh and the presence of a mass in the right iliac fossa. The treatment should be surgical as soon as a diagnosis is made, in the writer's opinion. Until the decision is reached, the surgeons advise small repeated doses of cathartics, while the medical men advise the use of enemata to evacuate the bowels, and opium to keep the patient quit as well as to relieve the pain.

Erdmann, John F.: Appendicitis in Young Children. (*New York and Philadelphia Medical Journal,* March 19, 1904, p. 537.)

During two years the writer saw 29 cases under ten years of age, and operated on 22 of these with 2 deaths, both the fatalities occurring in cases that were desperate. The youngest case was three years old, the age of the greatest number, 7 cases, was seven years. With reference to diagnosis, it may be very difficult to distinguish appendicitis from pneumonia or pleurisy with lower intercostal pain and no chest signs. In such cases one must wait twenty-four hours; if the pulse becomes rapid and the face anxious, appendicitis can be diagnosticated; on the other hand, if the breathing becomes rapid and the face flushed or livid, pneumonia is to be considered, even though the abdomen is tense and distended. In some of these cases there is a pneumococcus peritonitis complicating the pneumonia.

The important symptoms of appendicitis are fitful crying, restless sleep, abdominal tenderness, rigidity of the right lower quadrant, elevation of pulse and temperature, without blood in the stools. The patient is apt to put the hand over the appendix as if to ward off pressure.

For entering the abdomen, either the McBurney gridiron or the Kamerer split rectus method is used. Peroxid of hydrogen and salt solution are used to wipe out the abscess cavity; a rubber-tissue cigarette drain passed into the iliac fossa or down into the pelvis is generally employed; the incision is closed by layers, with a provisional suture at site of the drain. After operation an early movement of the bowels is secured either by Epsom salts, given by rectum before the patient is out of ether, or by divided doses of calomel as soon as vomiting ceases. Nothing is given by mouth until the bowels have moved or flatus has been passed by rectum. The drain is removed on the third, fifth or seventh day. Cases not drained are allowed to sit up on the fourth day and out of bed on the seventh; if drained they are placed in a semi-sitting position on the fourth day, and are allowed to sit up the earliest moment the wound will permit.

Stone, James S.: Blood Pressure Determinations Made at the Boston Children's Hospital. (*Boston Medical and Surgical Journal,* March 10, 1904, p. 262.)

Age was found to be very important, infants under six months giving a reading on the Riva-Rocci manometer of 60 to 70 mm.; children from two to three years 80 to 90 mm.; children of five or six years 100 mm.; of nine or ten years 110 mm. The general health also affected the pressure, chronic disease lowering the reading from 20 to 40 mm. Crying may raise the reading from 20 to 60 mm. or more; turning the patient from the back to the side may cause a fall of 10 to 25 mm.

Ether causes a rapid rise in pressure, which is followed by a slow fall.

Ordinary operative procedures seem sometimes to increase the pressure slightly. With the establishment of shock the pressure is lowered, but—

Other signs of shock, the more rapid pulse, the more feeble respiration, the cold, clammy skin, are noted earlier during operations than is a drop in blood pressure.

Conversely, patients practically pulseless at the wrist can withstand operations.

Crying, vomiting, retching, struggling or changes in position affect the blood pressure so much more than ordinary operative procedures as often to render pressure charts practically valueless, unless all these circumstances are noted.

HYGIENE AND THERAPEUTICS.

Beilby, George E.: Enuresis. (*American Medicine*, March 5, 1904, p. 397.)

Among 900 institution children the author, during three years, found from 4 to 10 per cent. afflicted with enuresis—a proportion greatly in excess of what obtains among children living under normal conditions. After studying the cases the author decided that the enuresis was due to irritability of the spinal centres in the lumbar enlargement of the cord. The underlying cause of this irritability was thought to be masturbation, inasmuch as by questioning and by observation the existence of the habit was found in 71 out of 75 cases. Moreover, not only was the bladder affected by this spinal irritability, but the various reflexes of the lower extremities—cremasteric, patellar, gluteal, and Achilles—were found exaggerated in many cases, while the reflexes of the upper extremities were not exaggerated, except in 2 cases. Treatment consisted in all the various measures for the prevention of masturbation, especial emphasis being laid upon circumcision for its moral effect, and upon cold spinal douching and counterirritants over the lumbar cord.

Illoway, H.: Thrush. (*Medical News*, February 27, 1904, p. 396.)

Because of uncleanliness even well-nourished infants with healthy mouths may become infected with the *oidium albicans.* An infant suffering from thrush will not or cannot nurse, and the greater the extension of the disease the worse the inanition is apt to become. If the esophagus is reached the case is practically hopeless. After mentioning the ordinary modes of treatment, bicarbonate of soda, hyposulphite of soda, zinc sulphate and nitrate of silver, etc., he recommends a mixture of one part of tincture of iodin with seven parts of glycerin as in his experience most efficacious.

Ashby, Henry: A Case of Scurvy in an Infant Fed on Municipal "Humanized" Sterilized Milk. (*British Medical Journal,* February 27, 1904, p. 479.)

Nursed by the mother for six weeks but not thriving the infant was weaned, being given "humanized" sterilized milk from a municipal milk depot. Two days' supply was gotten at a time, and was always sweet when used; though there was often butter oil floating on the top when the milk was warmed. The milk was used exclusively, and apparently of the same strength, the quantity being gradually increased and finally some baked flour added. The baby did fairly well until eight months old, when he lost the use of his legs and began to cry when handled.

When first seen by Dr. Ashby the gums were swollen and purplish, the roots of the finger nails injected, both legs were swollen, tender, shiny and immobile; there was tenderness of the bones of the arms. The case did not call for remark save for the fact that it was produced by using milk furnished at a low rate by the municipality, and called "humanized." Objection is made to this name, as it leads the poor to think the milk a satisfactory substitute for breast milk. Probably many cases of scurvy are produced by its use; not only that, but for every typical case of scurvy, there are half-a-dozen that show indefinite signs of scurvy, which may be called "parascorbutic." The tenderness of the bones may be entirely absent, but there is anemia, loss of flesh, distaste for food, at times diarrhea of dysenteric type, more rarely hematuria, a fine zone of pinkness in the gums around the teeth and a similar zone at the root of the finger nails. In such cases improvement at once follows a change of food, such as milk-whey mixture and orange juice.

Wise, C. H.: A Case of Poisoning from Atropin Eye Drops. (*British Medical Journal,* January 23, 1904, p. 189.)

A boy, seven years old, suddenly complained of dryness of the throat and giddiness; in a few hours he was unsteady on his feet, could not swallow and was strange in his talk. He had visual hallucinations, and when seen by the physicians a few hours later was talking rapidly and incessantly, frequently laughing outright and having jerky convulsive movements. He seemed to be gathering something, and on questioning said he was picking strawberries. There was no rash nor sore throat; temperature 100.2° F., pulse 96. The pupils were moderately dilated and insensible to light. On inquiry it was found that he was using a solution of atropin, 1 grain in 2 drams of water. One drop was instilled into the eyes three times a day. Symptoms began to appear after the fifth instillation, so that a total of 12 minims had been given in a period of two days. The symptoms persisted for nearly three days.

Spolverini, L. M.: Additional Researches upon the Presence of Soluble Ferments in Milk. (*Arch. de Méd. des Enf.* March, 1904, p. 129.)

In reply to certain denials that an amylolytic ferment can be produced in milk by feeding it to the animal, the author first alludes to the appearance in milk of certain vegetable principles ingested, and to the acquisition by milk of antitetanic properties (Brieger and Ehrlich), and of the typhoid agglutinins (Widal and Sicard); also, to the immunity conferred on nurslings by whooping-cough in the mother and to Behring's proposal to nourish infants on the milk of cows previously immunized to tuberculosis.

The author details his experiments on the milk and urine of a goat fed for a time on ordinary food, and later on sprouting barley. The diastatic power of the milk and the urine in producing achroodextrin and erythrodextrin was tested for several days on both diets. The results showed that there was a great increase in the diastatic power of the milk and a slight increase in case of the urine. To prove that the diastatic action was not due to bacteria, cultures of the milk were made, but were in all cases free from germs. Filia's researches on the possibility of increasing the proteolytic ferments by administering pepsin and trypsin are also referred to.

Finally, in the case of twenty nurslings suffering from proteid indigestion, even though the breast milk was apparently normal, the administration of 2 grams of pancreatin daily to the mothers produced speedy and marked improvement in the infants. Stopping the pancreatin was followed by relapse in the cases of several, while with certain others the improvement was continued. Not only on account of these soluble ferments in milk but also on account of Escherich's trophozymoses and the special character of the albuminoids in different animal species artificial feeding is inferior to nursing. Milk is not an inert nutritive mixture, but a living fluid endowed with vital properties.

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SOME CONSIDERATIONS REGARDING SUBSTITUTE FEEDING DURING THE FIRST YEAR.*

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The scope of a paper of this kind is too limited to allow of an exhaustive and detailed consideration of the possibilities and the resulting requirements of substitute feeding. What only can be done is to give briefly some idea of the various parts of the subject which our experience has shown to be important as a basis for rational treatment. There are certain essential principles which govern the modern method of feeding in the first year. It should be understood, however, that this substitute feeding even when dealing with the ordinary cases and not with the more difficult ones is not a simple problem.

We should remember that in a large proportion of cases the question of substitute feeding is not one of choice but of necessity, and that it is not a question of the relative value of natural and artificial methods. The great mass of cases of substitute feeding represents failures of breast feeding, either because the mother will not or can not nurse her infant. In like manner, whatever the cause, the great majority of these failures of breast feeding could have been avoided and the infant fed upon a substitute food successfully, provided that the modern methods, especially including the principles of percentage feeding, could have been instituted early enough and intelligently followed.

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I. HUMAN MILK AS A GUIDE IN SUBSTITUTE FEEDING.

We have in the last decade obtained considerable additional knowledge regarding human milk, and we still acknowledge that human milk feeding is best for the human infant, if such milk is obtained from a mother whose nervous system and general characteristics render her fit to nurse her infant. Human milk, however, has many limitations arising from the fact that the mammary gland is so sensitive that many causes alter its products and thus contraindicate the employment of these products as a food.

The question which must continually arise is what materials and what methods have been found by the latest practical and scientific investigations to be best adapted to the infant when good breast milk cannot be obtained. Allowing that human milk is the best food for infants in the first year of life the subject of substitute feeding must be dealt with as any other life saving question. It is evident, however, that we must first understand what it is that makes human milk the best food for infants and from our study of this subject we have arrived at certain conclusions which, although not entirely satisfactory, may be distinctly and concisely stated before taking up the question of materials and methods for substitute feeding.

In leading up to the subject of substitute feeding we must deal with the subject of human milk only in a very general way. The essential principles to be recognized and emphasized are as follows:—Human milk is practically sterile as it enters the infant's mouth and the temperature is 98° to 100° F., it is amphoteric or slightly alkaline in reaction. Although it is well known that various salts differing in their proportions from those in human milk are held in solution, modern investigations have not been carried far enough for us to obtain any practical clinical advantage in attempting to modify these salts when the milk of another mammal is used as a substitute food. The three broad representatives of food stuffs, fats, sugar and proteids, which occur in human milk, are the ones which we must practically deal with when making a substitute food. These three essential elements forming the material to be used for the nutrition of the infant do not always occur in the same percentages in milk from healthy women. Human milk, therefore, varies within certain limits and may, therefore, be considered a variable food, a point of great importance and one which must be emphasized in substitute feeding.

Thus good human milk may show a percentage of fat varying from 3 to 4, sugar from 6 to 7 and proteids from 1 to 2. Practical observations, however, of breast-fed infants show that in individual cases the limits in the percentages just given are not absolutely necessary for nutrition and do not mean that a somewhat higher percentage of fat than 4 must necessarily be unfit for the infant, nor that a decidedly higher percentage of the proteids than 2 must necessarily be undigestible, nor that the infant cannot thrive on less than 3 per cent. of fat or 6 per cent. of sugar. What it does mean, is that certain percentages and combinations of percentages of these essential elements, fat, sugar and proteids, must be adapted to the digestion and nutrition of the especial infant, and that no one set of percentages will fulfil these conditions whether they occur in human milk or in a substitute food. This simply means that a successful substitute feeding so far as percentages are concerned is essentially an adaptation of special percentages to the individual infant.

Certain additional facts in regard to the fat, sugar and proteids of human milk should be noted. The fats are evidently provided not only for the purpose of nutrition but as a means of maintaining bodily heat. This function of the fat cannot with impunity be trifled with, for it is essential for the active metabolism, the importance of which we are forced to recognize when we attempt to provide a substitute food. The proper amount of fat in the food is probably of great aid in the regulation of the fecal discharges and for this purpose varies in the individual infant according to its especial idiosyncrasy. It is also presumable that, for the proper digestion of the proteids, the fat in the individual case should be in proportion to the proteids. This, however, is practically a part of the problem which has not yet to any extent been solved. We have noted that breast-fed infants thrive best when the percentage of fat is nearest to the maximum and that when this percentage is high for the individual infant there will be disturbance of the digestion shown by a tendency to diarrhea or vomiting, while when such percentage is less than demanded by the individual infant the nutrition suffers and there is a tendency to constipation.

There are many cases, especially in premature babies and in babies with weak fat digestions, in which greater variations than normally occur in human milk are called for and where very low percentages of fat may be necessary.

The form of sugar which nature has found to be practical in the early months of life, and therefore provides for in the milk, not only for human infants but for all mammals who suckle their young, is milk sugar or lactose. It is well to remember that although this sugar is more digestible than fat that it does not have so much heat producing power in a given weight, its potential energy to the fat being only 1 to 2.4. It is also important to remember that it is milk sugar which in normal digestion is acted upon by the bacillus lactis aerogenes to produce an organic acid which drives out the more noxious forms of bacteria, which by their presence interfere with normal digestion. It is of some significance in the preparation of a substitute food that the nitrogenous constituents of human milk are represented by a number of distinct elements, yet practically our knowledge of these elements, so far as their use in substitute feeding is concerned, is limited in a general way to caseinogen and to the proteids of whey. It should be remembered in regard to these proteid elements that a supposed characteristic of human milk is that the whey proteids are in larger proportion than is the caseinogen and according to König this proportion is about 2 to 1. Although all chemists do not agree upon this percentage relation between the whey proteids and the caseinogen, and although there are many questions as to the whey proteids of milk, which are still undetermined, yet there is not much doubt but that these relative percentages in human milk differ much from those which occur in animal milks and therefore are an important consideration in preparing a substitute food.

Assuming good human milk as a standard we see by comparing its percentage ingredients with those of the milk of other mammals that there is no other milk which approaches its percentages sufficiently closely to permit of its being given in a purely undiluted form. We can also conclude that it is not an intolerance for milk as a whole, which causes so much difficulty in a substitute food, but that it is an incapacity of the individual infant to digest certain ingredients of milk. The fact which has been noticed by those who have regulated their substitute foods on a percentage basis is that there is a variable ability of the infant to digest fats, sugar and proteids, giving rise to what may be spoken of as fat indigestion, sugar indigestion and proteid indigestion. It is obvious, therefore, that the best system for obtaining a substitute food must provide not only for different percentages of fat, sugar and proteids, but also that these variable percentages can be obtained in any desired combination.

II. COW'S MILK AS A SUBSTITUTE FOR HUMAN MILK.

It is at once seen by referring to such mammals as the goat, ass and cow, mammals whose milk is most readily obtained in most countries, that a simple dilution of these milks with water, although in fact a modification of milk, in no way makes any of these milks resemble human milk sufficiently to allow of such simple dilution. Practically it is the cow whose milk we in most cases must use and it is, therefore, well to remember in our substitute feeding one or two points in regard to the milk of the different breeds of cows. Although the percentages in the milk of different breeds vary as they do in the individual animal, yet this is not of great importance. The fact is that the milk of whatever mammal is used or whatever breed of that mammal, whether in combination with artificial foods or not, modification is the essential principle and that it is about as easy to modify one set of percentages as another. The essential principle is that we should modify the different elements and percentages in milks as exactly as possible in order that we shall be able to adapt the combination of percentages to the greatly varying digestive capacities of the individual infant. In substitute feeding modification in one way or another is always employed and it is merely a question of proper modification. This does not mean that precise and unvarying percentages are necessary in every, or even in the majority of cases of infants, but that we do need exactness in our percentage modification of milk to determine intelligently what variations can be safely allowed in the especial case. There is no doubt from my experience and from that of many others that in certain cases even slight variations in the percentages of a substitute food produce effects either good or bad. It is also an essential principle which I think has been recognized by every one that while we emphasize strongly the possibility and desireability of exact percentage modification in substitute feeding, yet the other cardinal principles are just as important, namely:—an absolutely clean and a bacteriologically safe milk-supply. This means that pure materials must be obtained first and the modification of these materials second. The modification of impure milk must necessarily be disastrous to the infant and a bad modification of pure milk can be almost equally disastrous.

We are justified in saying that routine mixtures cannot be relied upon any more than can indiscriminate breast feeding. We can also state that, judging from the clinical observations of a large number of breast-fed infants, these observations suggest and in fact emphasize the principle that in the management of infant feeding we must recognize two important conditions. One of these is the digestion of the infant, and the other is its nutrition. These two requirements are essential for a successful lactation whether breast or substitute. Milk may be easily digested but not nutritious, or it may be highly nutritious but difficult to digest so that it is the equilibrium of these two conditions which produces a perfect infantile development. Supposing that the cow is the mammal from whose milk we decide to make our substitute food, a few points concerning cows are of practical importance besides the mere differences in the percentages of the different elements. The higher grades of cattle have been found not to provide the best milk for a substitute food. The fats for instance in the milk of the Jerseys and Guernseys differ very considerably from that of the other breeds and also from human milk, and it is preferable to use the milk of such cows as Holstein, Ayrshire, Durham and Devon in whom the fats appear to be more digestible and more in accordance with those of human milk. It is to be noted that the milk of the Holstein has a much larger proportion of the stable fats such as olein, stearin and margarin than does that of the Jersey which contains a much larger proportion of the volatile glycerides. These volatile glycerides do not exist in the mamma, but are formed in the milk soon after milking and this change takes place more quickly and notably in the milk of the Jersey and Guernsey cows. In comparing also the milks of Holstein and Jersey cows we find that in the modification of the former, the emulsion is more easily restored, is more permanent and is not so likely to produce oil-drops on the surface of the milk when subjected to the influence of heat and handling. The latter fact is, of course, of considerable importance when we are dealing with the rather difficult question of the transportation of modified milk.

It is important in a general way to know what effect heat has upon milk. 155°F. is sufficiently high to kill practically all pathological germs found in milk without coagulating the lactalbumin or producing any change which can be detected by the taste or appearance of the milk. This temperature is also sufficient to destroy the rennin enzyme which is used in obtaining the whey proteids and yet not high enough to coagulate the whey. Care must be taken when higher temperature such as 212°F., and sometimes even when lower temperatures are used not to combine a high percentage of sugar with lime water higher than 10 per cent., as under these circumstances the mixture is liable to become brown, seemingly from the action of the heat, the milk sugar, and lime water in producing a caramel. It is possible also that certain organized principles at a heat of about 177° F. undergo a change the nature of which is not very well known, but the evidence of which is found in certain chemical reactions. It is, therefore, better until more is practically known of the effects of heat on the milk above the required necessary 100° F., when given to the baby, not to use a temperature over 155°F., excepting in cases of transportation in hot weather, and in fact when we are sure of a clean milk-supply not to pasteurize at all.

If we have decided, as I am taking it for granted we have, to consider cow's milk as the substitute for human milk, it is well to know what the composition of the milk is in order that we can modify more exactly. We presuppose that the milk is not Jersey or Guernsey, but from a common mixed breed of cows preferably Holstein. The average of a large number of milks of this kind shows that the fat is 4.00, milk sugar 4.75 and total proteids 3.50. We must also understand that while in our standard human milk the whey proteids are probably larger proportionately to the caseinogen, in cow's milk it is the reverse, the caseinogen making up four-fifths ($\frac{4}{5}$) of the total proteids. This, of course, must be taken into consideration, especially when we are arranging for a substitute food for young infants or for infants with a weak proteid digestion which usually means weak caseinogen digestion.

III. PERCENTAGE MODIFICATION OF COW'S MILK.

In making up a substitute food from milk there are certain materials which are found necessary in order to carry out the various percentage combinations; these materials are:—(1) Creams of different but definite fat percentages obtained either by gravity or centrifugal separation. (2) Fat free milk which is used to increase the percentage of the proteids in the food beyond that contributed by the cream. (3) Milk sugar to raise the percentage of the sugar above the amount contributed by the cream and fat free milk. (4) Lime water to increase the alkalinity.

(5) Boiled water as a diluent. (6) Cereal water and jellies of barley or oatmeal to be used in definite percentages.

It is not necessary to speak of the details of obtaining these materials. We each have our own definite ideas as to the use of centrifugal or gravity cream, but it is well to remember that the fresh cream obtained by the centrifugal process is often of a good deal of value in the success of the treatment. What is most important in connection with the percentages, however, is that it should be understood that different creams are needed to obtain different combinations of the fat and proteid percentages. A few instances of this will suffice to illustrate the principle involved. For instance, the lowest total proteid that can be obtained from a 10 per cent. cream, when 4 per cent. of fat is needed in a substitute food, is 1.34, while with a 16 per cent. cream a proteid as low as 0.80 can be obtained. We must, therefore, remember that there are limitations in the percentage of the proteids dependent upon the use of creams of different strength. Other examples of the principle are, for instance, that a 3.50 fat, 6.00 sugar and .50 proteid cannot be obtained with a 10, 12, or 16 per cent. cream, but only with a 20 per cent. cream. Again, a 2.50 fat, 5.00 sugar, .50 proteid cannot be obtained with a 10 or 12 per cent. cream, but can with a 16 or 20 per cent. cream. Again, a 4.00 fat, 7.00 sugar and 1.00 proteid, a combination which is very generally used, cannot be obtained with either a 10 or 12 per cent. cream, but can be had with a 16 per cent. or 20 per cent. cream. There are many examples of this kind. We must also know what combinations may be obtained when we wish to use either total proteids, such as are obtained in plain cream mixtures; or split proteids, such as are obtained in the whey-cream mixtures. The possibilities of such combinations are seen in Table A.

TABLE A.

Prescriptions for modified milk may call for percentages of fats, sugar and proteids, in variations of 0.25 per cent. Any percentage of fats from 0.00 to 4.00 may be obtained in combination with any percentage of sugar from 4.00 to 7.00, proteids from 0.25 to 3.50.

WHEY CREAM MIXTURES.

Any percentage of fats and sugars as given above may be obtained with the following combinations of whey, proteids and caseinogen.

WHEY PROTEIDS, PER CENT.	CASEINOGEN, PER CENT.
.25	.25
.50	.25
.75	.25
.90	.25
.90	.50
.90	.75
.75	.50
.90	.60
.90	1.00
.75	1.25

Note:—If an alkalinity above 5 per cent. is desired in whey cream mixtures over 3 per cent. fat, the whey proteids cannot practically exceed 0.80 per cent.

I shall not say anything more about the materials for substitute feeding, having mentioned the principal precautions to be taken. The remainder of what I have to say about substitute feeding will presuppose a modification of cow's milk always as fresh, as clean and as nearly sterile as is possible in the individual case which is being managed.

IV. USE OF CEREALS IN SUBSTITUTE FEEDING.

The question of the use of cereals during the first year of life is an interesting one and one which has for many years been either advocated or opposed by those who have studied substitute feeding. Dr. Henry Shaw, of Albany, has contributed lately (January, 1904), some excellent work on starch digestion in infancy, and his results confirm what has been known for some time that the saliva of even very young infants contains a diastatic enzyme capable of converting small amounts of starch into maltose. This amylolytic function of the infant gradually increases as the infant grows older and seems to be well developed by the end of the first year. The small amount of starch which is digested in the early months is probably of little value from a nutritive point of view, the principal function of cereals at this early period of life being as an attenuant in modifying the caseinogen of cow's milk. It seems that as the standard human milk presents fewer failures in feeding than any other food and contains no starch it would be well to avoid using cereals, if possible. Since by the modification of the caseinogen to 0.25 by using the split proteid, and at the same time using a high whey proteid, the total proteid can be kept over 1.00, it would seem that this latter method of treating the proteids is more rational and more in accordance with natural physiological laws. It is possible, also, that merely because the diastatic power starts at birth, that it is not necessarily intended to be used at that time, as it is still an undeveloped function and is liable to be over taxed if used too early. The use of cereals should not only be instituted according to the age but also according to the diastatic power of the individual infant since there is no doubt that some infants seem to need and thrive on cereals much earlier than do others, just as some infants can digest and thrive on much larger percentages of the caseinogen of the cow's milk at a much earlier period than can others. What, however, is of special importance in this question of starch is that the physician should not only decide in the given case, whether to give a cereal but also should know what strength of cereal he is giving so that the especial infant may receive the percentage of starch which is best for it as it does the percentage of fat, sugar and proteids. This I have long advocated and Dr. Maynard Ladd is at present working out a system at the laboratory by which we can order any percentage of starch which we wish in combination with the other percentages of fat, sugar and proteids. While I have not found the use of cereal solutions necessary or advisable in the early months, yet, later, when they become of value in certain cases and also in the final weaning from modified milk to whole milk, an exact system will, I believe, be a most valuable adjunct to our feeding.

Cereal solutions can be added in place of the boiled water in any combination without altering the percentage of the fat, sugar and proteids, and the percentage of the starch thus added may be accurately determined, if the percentage strength of the cereal solution is known. For instance, if 14 ounces of a 1 per cent. solution of barley water is added in place of the boiled water to a 20 ounce mixture, the percentage of the starch in the mixture is $\frac{14 \times 1}{20} = 0.70$.

V. THEORY AND PRACTICE OF PERCENTAGE FEEDING.

Next of importance to the purity of the milk supply in obtaining a successful result in percentage feeding is that the proper amount, according to the age and weight of the especial infant, should be given and that the food should be given at proper intervals according to the individual infant and not necessarily according to the age. Too large or too small an amount of a proper food and to frequent or too prolonged intervals of feeding are responsible for many failures in the feeding problem. There is no question but that certain infants under certain circumstances do not require as much as the average infant of the same age, and it is often necessary to either change from shorter to longer intervals or from longer to shorter ones than is usually found to be best in the average cases. From what has already been said, I think that the indications for the use of the various percentage combinations are quite evident.

Our knowledge of the physiology and chemistry of human milk as compared with cow's milk is, we must acknowledge, imperfect, and we must not, therefore, expect that an infant in the early weeks and months of life can in all cases take a combination of percentages which corresponds to human milk but which is derived from cow's milk. We, therefore, in starting a new-born infant upon a modified milk take the precaution of beginning with percentages much below the standard average percentage of human milk and usually lower than the especial infant would probably take. This rule is prophylactic, for it is a much simpler matter, having once determined what the especial infant can digest, to adapt the food by gradually increasing the percentages until the nutrition is good, than to give a highly nutritious food in the beginning and thus run the risk of digestive disturbance.

The most frequent mistake in substitute feeding is to give a milk of too high percentages. It is most important, whether we are starting with a premature infant or with an infant at term, to begin with low modifications and then, advancing one element after another, to approach gradually the goal which we hope to attain by the eleventh or twelfth month, namely, unmodified cow's milk. This means as a rule that the percentage of the fat and the sugar should in most cases be rapidly advanced to 4.00 and 7.00, while the proteids usually have to be advanced more slowly and with greater caution. The whey proteid as a rule can be advanced more rapidly than the caseinogen, but we must always keep in mind that while the whey proteids are more digestible and, following the example of their proportion in human milk, can for some time be kept proportionately greater than the caseinogen, that the caseinogen probably is the more nutritious, and it is the percentage of the caseinogen which, as the months of the first year go by, should by the end of the year be increased both totally and proportionately so as to exceed the percentage of the whey proteids. We should also remember that while from the beginning to the end of the first year the fat when once a 4 per cent. has been reached remains the same, yet the sugar should be gradually diminished from 7.00 to 5.00 per cent. The rapidity with which these changes can be made varies according to the idiosyncrasies of the infant.

TABLE B.

THEORETICAL BASIS FOR FEEDING A HEALTHY INFANT.

Age	Fat	Sugar	Proteids	Proteids it split		Amount at each feeding in		Intervals between feedings in hours	Number of feedings in 24 hours
				Whey proteids	Caseinogen	ounces	c. c.		
Premature.	1.00	4.00	0.25	0.25	0.25	⅛–¾	4–25	1–1½	24–18
Premature.	1.50	4.50	0.25	0.50	0.25	"	"	"	"
At term.	2.00	5.00	0.50	0.50	0.25	1	30	2	10
End of 2d week	2.50	5.50	0.50	0.50	0.25	1½	45	2	10
" 3d "	3.00	6.00	0.75	0.75	0.25	2	60	2	9
" 4th "	3.50	6.50	1.00	0.75	0.50	2½	75	2	8
" 6th "	4.00	7.00	1.00	0.90	0.60	3	90	2½	8
" 8th "	4.00	7.00	1.25	0.90	0.75	3½	105	2½	7
" 12th "	4.00	7.00	1.50	0.90	1.00	4	120	2½	7
" 4 months	4.00	7.00	1.50	0.75	1.25	4½	135	2½	6
" 5 "	4.00	7.00	1.75	....	....	5½	165	3	6
" 6 "	4.00	7.00	2.00	....	....	6	180	3	6
" 8 "	4.00	7.00	2.50	....	....	7	210	3	6
" 9 "	4.00	7.00	3.00	....	....	8	240	3	6
" 10 "	4.00	6.00	3.00	...	....	8	240	3	6
" 11 "	4.00	5.00	3.00	....	....	10	300	3	5
" 12 "	4.00	4.75	3.50	....	....	10	300	3	5

The data given above are simply a guide to the rules for the feeding of the average healthy baby; they are only approximate and not intended to be followed in cases of difficult feeding without due consideration to the individual requirements.

I have endeavored to show in Table B how the percentages of the fat, sugar and total proteids, or whey proteids and caseinogen, should be advanced week after week, accompanied by a corresponding increase in the amount given at each feeding and in the intervals between the feedings. The number of the feedings in the twenty-four hours is also shown in the last column. These figures I have found to be, however, only a general guide and in this sense are theoretical, although they have been deduced from actual cases and for quite a large majority of infants they will be found to be fairly accurate. No table can show us how to feed in every case the special infant and I must reiterate that each infant should be studied as a problem in itself, and that we are merely aided in the solution of the problem by such tables as these and by keeping in mind the general principles spoken of earlier in this paper.

Starting with a premature infant with a fat percentage of 1.00, sugar 4.00, whey proteids .25 and caseinogen .25 or, with an infant at term with a fat percentage of 2.00, sugar 5.00, whey proteids .50 and caseinogen .25, we should endeavor by the end of the third week, in the case of the infant born at term, to have attained a 3.00 fat, 6.00 sugar, .75 whey proteids and .25 caseinogen, and then, gradually increasing, at the end of the sixth week we can in most instances attain a 4.00 fat, 7.00 sugar, .90 whey proteids and .60 caseinogen. At the end of the fourth month a 4.00 fat, 7.00 sugar, .75 whey proteids and 1.25 caseinogen may be reached, while at the end of the fifth or sixth month in many cases it is found that the infant thrives better if given a total proteid instead of the split proteid, even if smaller percentages of the total proteid are given, for in this way we use in larger proportions the more nutritious element, caseinogen.

In the first twenty-four or thirty-six hours of life in most cases, especially while the physician is waiting to see if the mother will be able to nurse her infant, a dram or two of a 5 per cent. lactose solution in boiled or distilled water is sufficient. After that a modified milk can be begun with at once. The rule is to begin with a low fat—1.50 to 2.00. The time for giving 4.00 fat varies greatly but usually is somewhere from the fourth to the eighth week. Higher than 4.00 fat I have not found it advisable to give except in a few cases. The 7.00 of sugar in many cases can be attained quite early in the first, second or third weeks, although usually it is reached, as shown in the chart, about the sixth week.

In regard to the proteids, it is often disastrous to give them too high to the infant in the beginning, and many physicians I think, err in giving them so high as to cause disturbance of the digestion and of nutrition. There is, on the other hand, much danger in keeping the proteids too low and it is exceedingly important that the physician should follow his case carefully, and see that the changes from time to time are tried until he is sure that the nutrition of the infant is not suffering from a too low caseinogen percentage. The physician must discriminate nicely between the two extremes of too low and too high caseinogen percentages. The rule is to begin low, watch carefully, increase gradually and at once decrease if symptoms of indigestion appear.

The use of split proteids and the change to the total proteid is a matter of judgment in the individual case. In many cases of weak digestion or if the infant is sick, the split proteid is found to be of great value even in the latter months of the first year; here again, however, the idiosyncrasy of the infant is strongly shown and must be determined in the individual case. In the ninth, tenth or eleventh month, according to the individual infant, the percentage of the total proteids should, if possible, be raised to 3.00 and the sugar reduced to 6.00 and again to 5.00. When we finally arrive at the goal which we have been striving for, namely, a 4.00 per cent. fat, 4.50 or 4.75 sugar and 3.50 proteids the modification of the milk can be stopped and unmodified cow's milk be given.

Symptoms.—It is not in many cases by any means a simple matter to decide which element of the food is at fault from the usual symptoms of gastroenteric disturbance. Sometimes it may be one element and sometimes another and yet the symptoms being very similar we cannot always determine which is responsible. It may be an over amount of one element, or an improper combination of elements which may result in a failure to gain in weight so that it is only by beginning at once in the more intractable cases with low percentages of the various elements and combining them in various ways that we can finally solve the problem.

Peptonization.—In certain cases, although in my experience rarely, peptonization, either partial or complete, of a modified milk may benefit the especial case. If, however, we diligently and intelligently carry out the essential principles underlying the adaptation of cow's milk to the infant and the more familiar and experienced we become with the principles of percentage feeding the less frequently will we resort to peptonization.

Accurate Weighing.—Probably the most important aid which we have in adapting a substitute food to the especial infant is the knowledge obtained by constant and accurate weighing. The variations in weight whether in gain or loss are so significant in connection with the question of the infant's nutrition that we are working as much in the dark when we do not have this aid to our treatment as when we are working with empirical formulæ instead of known percentages. A steady gain almost always indicates that we are working on the right principles, while an arrest or loss in weight indicates the opposite. A valuable guide as to the weight development of an infant is to be had by keeping a record of the weight index. The significance and convenience of this standard of comparison has been presented to you at this meeting by Dr. Ladd. The weight index expresses the ratio between the weight of any infant to the weight of the average normal infant of the same age. Expressed in per cent. it represents the weight development of an infant compared with the average healthy infant whose percentage development we may reckon as 100. The variations from the weight index at birth give a more accurate idea of the progress of an infant in its weight development than can be obtained by noticing the number of ounces gained or lost. For a means of comparison with other infants of different ages and stages of development, it is of obvious advantage to express the weight development in definite percentages.

Failures.—We should always remember that in a large number of feeding cases failures are pretty sure to occur, but we must remember in judging of our results that these failures are not always due to the food. It is a mistake that is frequently made by the physician as well as by the laity always to attribute loss of weight and gastroenteric disturbance to a fault in the character of the food, while in reality they may occur from faulty metabolism and unknown causes of bacteriological infection of the intestinal tract, of inhalation poisoning, undetected malformation of the gastroenteric tract, unhygienic surroundings and many other causes.

Final Remarks.—Let me reiterate what I have said before: infants cannot be fed by rule of thumb. We can only lay down the general principles governing the milk-supply and subsequent modification of the milk and, finally, its adaptation to the individual infant. Each infant must be studied by itself. The most successful feeder of infants will be the man who is thoroughly acquainted with the many resources in our modern methods of percentage feeding and who can appreciate the individual needs of the especial infant.

Localization of Hemichorea.—Occasionally an apoplectic stroke is preceded for some time by choreic movements involving the side of the body to be paralyzed; more often this phenomenon is noticed after the paralysis. It stands in close relation with hemiathetosis, but has nothing to do with general chorea. D. Aufschlager (*Zeitsch. f. klin. Med.*, Vol. 51, Nos. 3 and 4) has had occasion to dissect the brain of a patient who died of tuberculous meningitis and who had had choreiform movements in one arm for fifteen years. An old apoplectic cyst was found in the thalamus opticus to account for these. Pressure upon the pyramidal tracts could be ruled out and the long duration of the affection spoke against a purely functional derangement of the motor fibres.—*Medical News.*

THE INFLUENCE OF BREAST FEEDING ON THE INFANT'S DEVELOPMENT.*

BY HENRY DWIGHT CHAPIN, M.D.,

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Clinical results the world over have demonstrated that the milk of the healthy mother is the best food for the infant up to the normal time for weaning. It is the natural food for infants and this fact alone should cause us to believe that a superior, or even an equally good, food cannot be produced artificially.

The milks of the lower animals contain the same food elements as breast milk, viz.: fats, proteids, carbohydrates, mineral matter and water, but in different proportions. Investigation has shown that the composition of milks of different species of animals is closely related to the rapidity with which the young grow, a milk high in proteid being intended for a quick growing animal, as might be expected. The milk of any species has uniform characteristics and is kept by nature within certain narrow limits of variation; this fact has been demonstrated by many experiments on cows. It occurred to some dairymen that feeding fat to cows might increase the amount of butter fat in the milk, and as high as two pounds of tallow a day were fed to healthy cows, but the increase of fat in the milk was hardly perceptible. Attempts at feeding proteid into milk have not been successful, and the most competent dairy students have come to the conclusion that it is beyond the power of man to alter the character or composition of cow's milk, except by disturbing the cow's nervous equilibrium or digestion, or by underfeeding. When normal feeding and nervous conditions are restored the milk resumes its normal character. This is exactly what we find in treating nursing mothers; if they are worn out and nervous we try to improve their general condition; we order easily digested food, look after the state of the bowels and have the mother sleep away from the child, where she may rest and not be disturbed; if the mother is overeating we cut down her diet and order exercise to the point of fatigue to insure complete metabolism of the food. In a word, we try to bring about a normal condition of the body and nature does the rest; we do not alter the composition of milk, increasing or decreasing one or all of the ingredients at will, as we sometimes think we do when we successfully treat a nursing mother, but bring about the secretion of the milk that is normal to that mother. What is normal for one woman may be abnormal for another, just as much as rich Jersey milk would be unnatural in a scrub cow of no dairy qualities; but leaving out extremes, the milk of any species has a fairly fixed type of composition which shows the nutritive requirements of the young of that species.

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In artificial infant feeding little difficulty is experienced on the part of the infant in digesting and assimilating as much fat and carbohydrates as are found in breast milk, but great disturbance is often the result when as much proteid as is found in mother's milk is given. A favorite method of overcoming this disturbance has been to reduce the amount of proteid in the food to from one-third to one-half of that in human milk. When it is remembered that the blood, brain, heart, liver, lungs, kidneys, and muscles, in fact the working portions of the body, are built up from the proteid of the food, the tremendous advantage that the infant which is assimilating good breast milk has over the bottle-fed baby, that may be assimilating not more than one-half as much vital-tissue building food (proteid) will be at once appreciated.

Poor nutrition paves the way for sickness. The breast-fed infant is not as susceptible to disease as the artificially-fed baby, and when attacked recovers more promptly, as it has more vitality and reserve force. Condensed milk babies proverbially succumb to almost any serious illness, and when the small amount of proteid in highly diluted condensed milk is considered, it is surprising that any other result could be expected, as the infant has in this food little from which a strong vigorous body can be constructed. Too much attention has been paid in the past to gain in weight, and *too little to the character of the flesh.* Many experiments have shown that of two animals of the same weight one may be a little dwarf enclosed in a mass of dropsical fatty tissue, while the other may be a giant in comparison, when the amount of blood and size and strength of all the vital organs are determined in both. This difference is due to feeding too little proteid to the dwarfed animal.

From a nutritive standpoint alone the breast-fed infant has a great advantage over the bottle baby, but it has other things greatly in its favor also; mother's milk is more than food as we think of food for adults; it is a food that adapts itself to the infant's developing digestive tract. What form the mother's milk assumes after it reaches the stomach depends upon the state of development of the stomach; in the early stage of lactation, the secretion of the stomach is the rennet ferment which changes the casein of the milk into a soft solid mass or curd which is not digestible by pepsin; the character of this mass or curd differs with the kind of milk. When the stomach secrets hydrochloric acid, it combines with the curd and forms chlorid of paracasein, a compound much denser than rennet curd or paracasein: this compound of curd and acid is readily digested by pepsin, and gastric digestion commences; as fast as the secretion of acid and pepsin increases in quantity and strength the mother's milk is ready to use it up, and we find as the child grows older and its stomach increases in size and becomes stronger, that it takes longer for it to empty and that the feeding intervals must be made greater. At birth the stomach digests little of the food and secretes little digestive juice, but mother's milk does not change in composition as lactation advances, except toward the time for weaning, when it may become poorer in solids; it is one of the wonderful things of nature that the mother's milk does not change as the infant grows older; nature does not have the *young* follow the mother's milk, but has the milk ever ready to fit the developing digestive apparatus. If the stomach is backward in secretion of acid and pepsin the milk remains soft and ready for intestinal digestion. Nature intends that the infant at weaning shall have a well-developed and vigorous digestive apparatus and provides in the casein of milk a food substance that will insure this development. The caseins of milks differ with the species, and knowing the function of the casein, and that the digestive apparatus shows great differences in the various species of mammals, it would be unreasonable to think that the milk of one species would adapt itself to the digestive tract of another.

The differences in milks are not so much nutritive as physiological ones and a little thought will bring this fact home to anyone. In the reproductive process in the simpler forms of life the young are offshoots from the parent's body, from which they gradually separate, and when detached have all the attributes of the parent; nowhere in nature do we see parents leaving their young until the young are able to secure food for themselves; if the necessary food is not all derived from the parent's body, suitable food is provided until the young is able to look out for itself. The various mammals are *physically* separated from the mother's body at different stages of development; *physiologically* none are separated from her body until they are fully formed and able to eat the same kind of food as she eats; *physical* separation takes place at birth; *physiological* separation at weaning.

From a physiological standpoint an artificially-fed baby is a premature child and anything but maternal milk is foreign to its digestive tract; chemical analyses of foods will not show all their defects or advantages; these are often brought to light only by a study of physiology and pathology. The reason so much difficulty is had in feeding cow's milk to infants, is that digestion in the calf is different from infantile digestion; cow's milk is physiologically adapted to a calf's stomach; human milk to the infant's stomach.

With our present knowledge, the principles of infant feeding become very simple; the food should contain as much nutriment as breast milk; it should be as digestible; and it should adapt itself to the developing digestive tract. Milk of some kind must be the foundation of food that is to be the regular diet as its casein is the only form of proteid that will change its character with the change of digestive secretions. As the stomachs of mammals differ, so their milks differ and there can be no scientific infant feeding unless this fact is kept in mind.

When we go beyond the chemical composition of human milk and cow's milk and look at how they are affected by the digestive juices, we see at once that their differences are more than quantitative ones and the supposed difference in reaction. Adding alkalies to cow's milk does not change it into breast milk; neutralize the alkali and the properties of the cow's milk return; nor does adding acid to mother's milk make it resemble cow's milk. We now know that adding lime water or other alkalies to cow's milk prevents the stomach secretions acting on the casein and forming compounds that require gastric digestion. Heating cow's milk also alters it so that it is less easily acted upon by the rennet ferment of the stomach and softer curds are thus formed. In all our attempts at making a substitute for maternal milk we have been groping along in the dark trying to explain our clinical observations by the supposed chemical differences of human and cow's milk. With the great flood of light that recent research on milk has turned on this subject we are able to see how well-established facts and observations have been misinterpreted. Hammersten who did so much work on milk, really discovered what has recently led to clearing up many of the perplexing problems of milk chemistry, but the conceptions of the chemistry of proteids and acids in his time were such that he failed to recognize that he had made a great discovery. By an irony of fate it was left for two Americans (Van Slyke and Hart), thirty-seven years later, to solve the problem of what changes take place, and what compounds are formed when cow's milk is acted on by rennet, acid and pepsin. Many of their results had been obtained by Hammersten, but his theories made him believe that the observed facts had no significance; what is really an establishment of a knowledge of the processes of digestion of milk in young animals was thus made to wait many years.

The well-nourished, breast-fed child has its food supplied in proper quantities; in forms which are assimilated to the best advantage, and that so adapt themselves to the growing digestive tract that full development is insured. The haphazard, bottle-fed baby often receives food deficient in material from which healthy organs and tissues can be constructed; the form of the food when of sufficient nutritive value is often such that no functional development is produced; or such that it causes constant irritation and lays the foundation for chronic indigestion and malnutrition. The breast-fed child begins life for itself well developed and fitted for the struggle for existence, while the artificially-fed baby at the same age may be anemic, dwarfed, and have its organs undersized and perverted in their functions. Careful feeding from the start may lessen the danger of such results, but we must realize that it exists. We cannot appreciate the influence that breast feeding has on the development and future of a child until we understand that many of the common disorders of bottle-fed infants are the ultimate result of the lack of mother's milk. Human milk, like many other things, is not truly appreciated until it is missed. The place milk holds in the animal economy is well worth careful consideration; at this time it is only possible to touch on the subject, but in a few articles published recently the writer attempted to show what an important part of the development of some animals takes place while at the mammary glands and how their secretion changes to meet new conditions in the young. The essential scope of these articles was to emphasize the biological aspect of infant feeding.

When the doctors, the nurses, and the mothers come to realize that nature did not intend a child to take anything but breast milk as food until its digestive tract was completely formed, and that maternal milk helps in the formation of a strong and vigorous stomach, there will be less trouble with artificial feeding, as careful feeding will commence at once and the start will be made with a fairly well child and not with one that is suffering from a perversion of the digestive apparatus. The mothers will be taught that a food that "agrees" is not necessarily the proper one for continued use, and that the change to something else may have a useful purpose and that in the art of feeding there are other problems than mere gain in weight to be considered.

The Recognition of Fetal Syphilis.—Hecker (*Deut. med. Wochenschr.,* November 6 and 13, 1902) has made thorough examinations of 62 still-born children and has found 33 (53 per cent.) syphilitic, and 6 (9.7 per cent.) doubtful. Many of the cases (15 of the 33) could not be definitely considered syphilitic immediately at autopsy, but had to be examined histologically before the diagnosis could be made certain. A macroscopic diagnosis was made only when at least two organs showed undoubted signs of syphilis. The spleen was the organ oftenest affected; then the bones, liver, kidney, etc. For histologic examination the kidneys are the most suitable organs, as they are the last to show signs of maceration, and are found more frequently diseased microscopically than any other organ. They were found involved in 90 per cent. of cases—spleen, 61 per cent.; thymus, 50 per cent.; pancreas, 46 per cent.; bones, 43 per cent.; liver, 23 per cent.; lung, 17 per cent; navel, 16 per cent. The socalled macroscopic syphilitic bone lesions were often found microscopically to be only irregularities due to maceration. He discusses at length the macroscopic and microscopic syphilitic lesions, dividing the former into pathognomonic, probable, and uncertain signs, and considering the latter from the standpoint of the blood-vessels, the connective tissue, the epithelium, and the disturbances of development.—*American Medicine.*

PRIMARY MALIGNANT TUMOR OF BOTH ADRENAL GLANDS IN A CHILD OF TWO MONTHS, WITH SECONDARY AFFECTION OF THE LIVER.

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A little girl two months old was brought to the Johns Hopkins University, Children's Department, on account of a distension of the abdomen. The baby was one of twins, the other being well. There was no history of malignant tumors in the family. The birth was normal. It had not had any sickness since birth, took the breast well and the bowels moved regularly. Lately the passages became somewhat loose and of a green color. The parents first noticed a slight swelling of the abdomen one week before the baby was seen at the dispensary. This swelling increased rapidly. When first seen, the baby was fairly well nourished and weighed 10 pounds 15 ounces. The temperature was 98.4° F. The skin and the visible mucous membranes were pale. There was no glandular enlargement. At examination nothing was found of particular interest besides the enlargement of the abdomen. There was some edema of the abdominal walls. The superficial veins were distended. Both flanks were bulging, the right more than the left. On palpation a hard, smooth mass was felt chiefly in the right side of the abdomen, extending from the costal margin down to the right inguinal region. It passed deeply into the right flank filling up the whole space between the ribs and the iliac crest. In the right inguinal region a firm edge was felt, which could be traced from Poupart's ligament toward the navel, passing below the navel and then gradually ascending. To the left of the navel a notch could indistinctly be felt, but it was not possible to distinguish two separate masses. The uniform tumor apparently represented the liver. The distance from the end of the sternum to the navel was 15 cm., the length of the tumor mass in the median line 16 cm., and the greatest circumference of the abdomen measured 46 cm. The distance from the interclavicular notch to the umbilicus was 21.5 cm. The percussion note over the tumor was dull; that over left flank tympanitic. The red blood corpuscles numbered 2,800,000 to the cu. mm., the white 11,000. The differential count of 560 white blood corpuscles gave 79 per cent. polymorphonuclear leukocytes, 18.5 per cent. small mononuclears, 2.3 per cent. large mononuclears and transitionals, and 0.2 eosinophiles. The red blood corpuscles were of rather uniform size. A few cells were polychromatophilic and few contained basophilic granules. The baby died in convulsions six days after it was seen the first time. The abdomen had enlarged more and there was, besides edema of the abdominal walls, some edema of the legs. The baby had become emaciated rapidly.

, *Autopsy.*—(Dr. Bunting and Dr. Amberg). The postmortem examination was made twenty-seven hours after death. The body was much emaciated and showed edema of legs and abdomen.

Peritoneal Cavity.—The abdomen protruded markedly in the region of the liver. On opening the abdominal cavity no fluid was found. The intestines were pushed to the left. The greatest part of the abdomen was taken up by the greatly enlarged liver. The diaphragm reached the fourth costal interspace on the left and the third rib on the right side. The region of the left kidney was taken up by a second tumor mass, which adhered by its upper pole to the diaphragm and the surrounding tissues. It was particularly fixed to the posterior wall of the abdomen.

The *pleural and pericardial* cavities did not present any pathological changes. The weight of the *heart* was 28 grams. It seemed of about normal size. The foramen ovale was open, lying as an oblique channel with an orifice of about 5 mm. in diameter. On the tricuspid and mitral valves were some small glistening rather translucent vegetations along the lines of closure. The *lungs* were slightly edematous but contained air. The *thymus* appeared rather small, measuring about 2.0 by 1.5 cm. The *spleen* weighed 12 grams and measured 6.2 by 3 by 1 cm.; its capsule was smooth. The organ was rather pale in color and the Malpighian corpuscles were indistinctly visible. The pulp was not increased in amount, neither were the trabeculæ in thickness.

The *liver* weighed 1200 grams, measuring 21.5 by 15.5 by 8 cm. The capsule was smooth and glistening, but the surface showed here and there depressed areas averaging about 3 mm. in diameter, with irregular humorrhagic areas on the base. The edge was slightly roughened, but firm to the touch. The notch between the right and left lobe was deep. In general, the surface of the liver was of a mottled color. Areas of a light yellow, and at times of almost white color alternated with areas of a rather deep pink color. In some places the individual lobules seemed to be outlined by opaque yellow borders enclosing a more translucent centre. On section the organ had little resemblance to the normal liver, being composed almost completely of a rather firm yellowish white tissue.

The design of the liver was lost. Particularly on the periphery of the left and in the median part of the right lobe irregular nodules of yellowish color were found with irregular caseated areas between. In the middle part of the right lobe the central veins were congested, having a periphery of a rather dirty yellowish color. The *gall bladder* was small, its walls were translucent, it contained a few c.cm. of a light yellow bile.

The *right kidney* appeared normal, weighing 22 grams, and measuring 5.3 by 3.0 by 1.5 cm. The capsules stripped easily. The cortex averaged about 2 mm. in thickness; the striation was well marked and the glomeruli could just be made out.

The *left kidney* was firmly adherent to the second tumor mass, the whole together weighing 62 grams. The whole mass divided itself in three parts. The lower part was formed by the kidney, measuring about 2.0 cm. in width and 2 cm. in thickness. The median portion was formed by a cyst of about 5 inches diameter, with a firm fibrous wall. The upper pole was formed by a glandular mass measuring about 2.5 by 1.3 by 2.5 cm.

On section it was found that the three parts were separated from each other by rather thick fibrous septa. The cyst appeared imbedded in the upper pole of the kidney. The cortex of the kidney averaged from 2 to 3 mm. in thickness and besides the change in form no other pathological lesion became manifest. The ureter connected with the pelvis of the kidney below the tumor mass. The cyst contained a thin bloody fluid and fibrin. The glandular substance was made up of a mass of little colored tissue alternating with pinkish areas. The central portions were more injected. The mass itself was divided into two parts by a fibrous septum, being connected with the fibrous capsule. The mass apparently represented the left adrenal gland, although it resembled the normal adrenal but slightly. The *right adrenal* seemed to be normal on section. The *pancreas* appeared to be normal. The *stomach,* intestines and genital organs did not present any lesion. The *abdominal lymph nodes* were not enlarged and appeared normal on section.

Microscopical sections of heart, intestines, pancreas, spleen, lymph glands and genital organs do not present any lesions. The sections of the lungs show a congestion of the vessels, some edema and here and there some epithelial desquamation in the alveoli. The kidneys present some cloudy swelling of the epithelium of the tubuli; and the right more than the left.

The thymus gland shows an increase of its connective tissue. The differentiation of the lobules in a cortical and medullary part is lost. The Hassall bodies are numerous and large, but they do not show a hyaline degeneration on sections stained by Van Gieson's method.

The upper part of the tumor mass in the left side of the abdomen has a thick capsule of fibrous connective tissue with few cells. The capsule contains some blood vessels of different size. On one point a small area of adrenal cortex cells lies imbedded in the outer layers of the capsule. Starting from the connective tissue of the capsule broad bands of connective tissue traverse the tumor dividing it in several parts. From these bands finer septa of connective tissue enter the tumor mass producing a distinct alveolar design. The larger alveoli again possess a network of very fine connective tissue, in the meshes of which the tumor cells are enclosed. These meshes contain frequently only six to eight cells, sometimes even less. This network is particularly well seen in specimens stained with Mallory's connective tissue stain. The connective tissue forming the stroma of the tumor is richer in fusiform cells than the fibrous capsule. In some parts hemorrhages are found between its fibres, in other parts smaller and larger areas of blood extravasation are seen between the septa and the tumor cells. In some places there are small spaces containing red blood corpuscles and lined by endothelial cells, and in some instances the septa outlining the alveoli seem to be formed by blood vessels, the walls of which consist only of endothelium. Hemorrhages of various size are distributed throughout the tumor. Immediately underneath the capsule remains of the adrenal cortex are preserved. In some places a zona glomerulosa and fasciculata can be distinguished, while in others the tumor cells have reached the capsule. But even where some structure of the cortex can be made out, there are in some places tumor cells seen between the elements of the cortex and small areas of blood extravasation. What is left of the cortex is for the greatest part separated from the tumor proper by a band of connective tissue. A transition of the cortex cells into tumor cells cannot be observed; neither are there transitions from endothelial nor connective tissue cells into tumor cells. The tumor cells are rather small and of relatively uniform size, although larger cells are seen occasionally. The nuclei are stained deeply and they are surrounded by very little cytoplasm. The form of the nuclei is mostly oval or round. Karyokinetic figures are fairly numerous. Frequently the cells are arranged in rings, the centre of which are formed by a mass without structure, staining reddish in specimens stained with hematoxylin-eosin. Occasionally there are small areas of degeneration, where the nuclei do not take the stain well.

The wall of the cyst consists of connective tissue fibres with fairly numerous fusiform cells. Where the cyst adjoins the kidney, the cyst wall is in uninterrupted connection with the capsule of the kidneys, although there remains an indistinct line of separation. Areas of tumor mass are imbedded in the wall of the cyst and they resemble in their structure closely that of the tumor just described. They appear to be somewhat richer in blood, which in places is enclosed in spaces lined with endothelium. The wall of the cyst, particularly toward its inner surface, contains small nests of disintegrated tumor cells and in some places fairly large hemorrhages are found between the fibres. In one place a tumor mass was seen, which broke nearly completely through the walls of cyst.

The structure of the cortex of the right adrenal is well preserved as far as the zona glomerulosa and fasciculata are concerned. The zona reticularis seems to be compressed and in parts atrophic. The medulla is completely replaced by a tumor mass, which is separated from the cortex by a septum of connective tissue. In some places this septum is wanting and the tumor cells adjoin immediately the cortical cells, but they never penetrate into the cortex. The tumor resembles in every particular that of the left adrenal, except only that the hemorrhages are smaller and less numerous.

In the sections of the liver perfectly preserved acini do not exist. In places areas of apparently intact liver cells are seen, in other places the liver cells show fatty infiltration. In some areas the nuclei of the liver cells do not take the stain well and in some places there are areas of more advanced necrosis, but not of considerable size. The characteristics of the tumor mass, which forms by far the greatest part of the liver, are the same as those of the adrenal tumors. The number of nuclei in stages of division is here greater. Where the liver acini are best preserved, it seems that the tumor invades the acini from the periphery, but the picture is not distinct enough to decide the modus of invasion. Some nests of liver cells are sometimes found between the cells of the tumor, which is not sharply separated from the remnants of the liver tissue.

The tumor is apparently a malignant growth. Several factors make it probable that it takes its origin from the medulla of the adrenal glands. While it cannot be decided positively, it is very improbable that the tumor of the right adrenal is metastatic.* The cells comprising the tumor of the liver are foreign to that organ and the affection of the liver must be regarded as a secondary invasion, even if the growth should have started in an accessory adrenal gland. Aichel[1] mentions their occurrence in the right lobe of the liver and the assumption that the tumor is of medullary origin would not stand in opposition to the possibility of its derivation from an accessory adrenal gland, since May[2] found in two instances that accessory adrenal glands were composed of cortex and medulla. The growth of the left adrenal is too far advanced to give any information regarding its origin. Transition forms from cortical to tumor cells do not exist, neither are transition forms seen from endothelial or connective tissue cells to tumor cells. The relation of the tumor to the cortex of the right adrenal and the character of the cells make its origin from the medulla probable. The tumor cells do not correspond to any cellular element of the fully developed adrenal glands. But, thanks to the kindness of Dr. Bunting, I was able to compare the tumor cells with the cells of the medulla of a six months' old fetus and the resemblance of the tumor cells to these is very striking. In the light of Kohn's[3] paper, "Das Chromaffine Gewebe," it would have been desirable to find out whether the tumor cells give the chrom reaction. But the tissues had been hardened in Zenker's fluid and had then been kept in alcohol. Zenker's fluid does not give the reaction, and treatment of the tissues with alcohol prevents it. Nevertheless a trial was made to obtain the reaction, using the method of Wiesel,[4] but the negative result under these conditions does not show that no chromaffine cells were present. According to Kohn the presence of chromaffine cells would have shown conclusively that the tumor cells were descendants of medulla cells. This proof would become less conclusive if the newer investigations of Fuhrmann[5] should be confirmed. This author found that the cortex cells of the guinea pig forming the inner layer, corresponding to the zona reticularis of Arnold,[6] contain chromophil granules.

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* Regarding the occurrence of multiple primary malignant neoplasms, see M. Walter, *Archiv. f. klin. Chirurgie*, 1896, Vol. LIII., p. 1.

The classification of the adrenal tumors and of those taking their origin from Marchand's accessory adrenals meets with great difficulties; so that the decision whether a tumor belongs to the carcinomata or sarcomata simply from a morphological point of view frequently remains uncertain. These difficulties become greater still, if the classification is based on histogenetic grounds. The classification of the tumors from a histogenetic point of view is a question much fought over. The question, which arises here, is, whether the glandular elements of the adrenals are of ectodermal or mesodermal origin. Authors, who regarded the adrenal glands as derived from the mesoderm (Beneke[7] and Jores[8]), denied the possibility of the occurrence of real carcinomata, while others (Horn[19] and Graupner[10]) admitted their occurrence with the development of the adrenal glands from the epithelium. But even when the origin of the adrenal glands is taken as granted, the classification of the tumors is still not certain. So for instance McWeeney[11] adheres to the mesoblastic origin of the suprarenal rests in the kidney, but avoids the classification of his tumors, which are morphologically of an epithelial character. The same difficulties apply, as Rolleston and Marks[11] state, to the tumors of the adrenal glands. Therefore several authors, for instance Lubarsch,[12] taking into consideration the difficulties of the morphological or histogenetic classification, regard these tumors as a class of their own. Birch-Hirschfeld[13] followed by Kelly[14] designate them as hypernephromata with the subdivision in benign and malign forms. Woolley,[15] who decided to adopt the mesodermal origin of the gland, proposes the name "mesenthelioma" and designates the tumor described by him as mesothelioma malignum carcinomatode. But the investigations of Semon[16] and Aichel[7] demonstrated the connection of the adrenal gland with the Urniere and Graf Spee[17] has shown that the ectoderm is directly concerned in the formation of the Urniere.

Since we think it probable that our tumor takes its origin from the medulla, the question, whether the adrenal gland develops in part from the ectoderm, only would enter in consideration, if the medulla is derived from the same element as the cortex. That such is the case was thought by several authors, while others connected its origin with the sympathetic nervous system. The literature on this subject is discussed in the papers of Flint[18] and Kohn.[3] Flint himself leaves the question as to the origin of the medulla open, but he showed that it cannot be formed from the inner layer of the cortex. According to Kohn the chromaffine tissue forming the medulla is totally different from the elements of the cortex, and takes its origin from the embryonic sympathetic ganglions. The chromaffine elements differentiate themselves into a new type of cells composing the chromaffine tissue and this tissue is a tissue *sui generis*. Whether the findings of Fuhrmann, which are given above, can be brought in line with these ideas, must be left to further investigations.

The fact that the histogenesis of the medulla does not seem to be definitely decided, prevents the classification of our tumor on a histogenetic basis. Morphologically it may be classed as a carcinoma or as an alveolor sarcoma.

Primary malignant tumors of the adrenals are not of a common occurrence. Mankiewicz[19] was able to collect in 1887 18 cases, which had been reported during a period covering thirty-seven years. Williams[20] found among 8,378 consecutive cases only one and he speaks of 36 reported cases. Rolleston and Marks[11] tabulated 26 cases, which were critically sifted and Ramsay,[21] in 1899, gives an analysis of 67 cases. Of the 61 cases in which the age was given, 14 fall in the first two decades of life. Five of the 26 cases of Rolleston and Marks were under 10 years of age. Williams states that more than one-third of the 36 cases were children. Two of the cases he cites in this connection were eighteen years old (Peacock and Bristowe[22] and Fraenkel[23]), and in the case of Martin[24] it is very doubtful, whether it is a primary malignant tumor of the adrenal gland. The case of Dalton in a child only a few weeks old, cited by Williams I could not find. In looking over the literature I met with the following cases in children:

Greenhow[25] reported a case in a twelve-year-old girl. Eberth[26] is not sure whether the tumor observed in a child of seventeen months started from the adrenal gland or from the kidney. Fox[27] reported a case of a girl two years old and another one shown by Dickinson* of a girl three yars old. Mankiewicz's[19] case was that of a girl two years of age and he cites a case of a boy eleven years of age (reported in Klebs' Handbuch der spec. pathol. Anat. Berlin, 1876). De Ruyter's[28] case died on the tenth day after birth. Orth[29] observed a primary malignant tumor of the adrenal gland in a girl four and a half years of age and Cohn[30] in a female baby of nine months. The case of Earle and Weaver[31] was a boy three years old, that reported from the clinic of Lazarus[32] a child three and a half years of age. Roberts[33] left the origin of the tumor seen in an eight-months-old colored girl undecided. Caillé's[34] report concerns a baby of five weeks and that of Bruechanow[35] a girl baby fourteen months of age. Besides these Rolleston and Marks tabulated a case of Brooks from the postmortem book of the Great Ormond Street Children's Hospital. It occurred in a boy eight and three-quarters years of age. Pepper[38] reports the case of a female child, who died at the age of six weeks. From the other cases, cited by Pepper, that of John Orr (*Edinburg Medical Journal,* September, 1900) occurred in a sixteen-weeks-old female baby, 2 cases of Gade (Förd Norske Med. Salsk, Kristiania, 1886) in boys four and six years of age, a case of Pitt (Transact. Pathol. Soc., London, Vol. XLIV.), in a male baby of ten months, the primary seat in the adrenal is not regarded as quite certain, and a case of Dobbertin (Beitr. z. Pathol. Anat. u. z. Allg., Path. Vol. XXVIII.) in a girl of fourteen months. Furthermore, Pepper cites the cases of Heaton in a girl of nine weeks (Transact. Pathol. Soc., London, Vol. XLIV.), and Parker (*ibid.* Vol. XXXI.) in a girl of five weeks. In the first the liver was regarded as the primary seat of the tumor, while in the second a tumor found between the spleen and kidney was taken for a secondary growth. Reimann[39] describes a case in a baby of three months.

In most of the cases just cited metastases or invasion of other organs by direct continuity were noted. In the cases of De Ruyter, the second case reported by Mankiewicz, the case of Reimann and that of Orr, both adrenals were affected. According to Rolleston[36] secondary growths occur most frequently in the liver besides in lungs, kidneys, etc. An affection of the liver was noted in the cases of De Ruyter, Orth, Fox No. 2, Cohn, Bruechanow, Reimann, Pepper, Gade, Pitt, Heaton, Orr and Parker. De Ruyter does not decide whether the organs (liver and adrenals) were attacked simultaneously or one of them first. In his first case Fox speaks of a smooth enlargement of the liver and Earle and Weaver found the liver cirrhotic. Of interest are the metastases which Cohn observed on the skull and ribs, and the case of Caillé, where the spine was affected. The cyst observed in Mankiewicz's case was an accidental renal cyst. In the cases given a cyst corresponding to that found in our case was not noted, but similar cysts were several times observed in adults. Our observation, that the lymph glands were not affected, does not stand isolated. The atrophic condition of the thymus was noted also by Mankiewicz.

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* This case seems to be the same as No. 6 in Rolleston's and Marks' table which was reported by Ogle. Path. Soc. Transact. London, Vol. XVI., p. 250.

The most prominent feature in our case from a clinical point of view was the great distension of the abdomen, which developed rapidly, while the baby did not seem to be subjected to much discomfort. The prominence of the enlarged liver, together with the impossibility of differentiating by palpation two distinct masses separated from each other, made it probable that the disease in question was mostly confined to the liver. Furthermore, the adhesion of the adrenal tumor to the posterior wall of the abdomen, together with the fact that the intestines were pushed to the left giving a tympanitic percussion note over the left flank masked the presence of the adrenal tumor effectively. For the different points to be considered in the diagnosis we refer to the paper of Ramsay,[21] while the relation of the adrenal tumors to Addison's disease is discussed fully by Lubarsch.[12] In our case there was some discoloration associated with peeling on the extensor surfaces of the arms, but it hardly need be mentioned that it did not show the slightest similarity to bronzing. An excessive development of hair and the genital organs, mentioned in Rolleston's paper, was seen in the cases of Orth and Fox. Besides the general symptoms of malignant tumors and those derived from the relation of the tumor and its metastases to their surroundings, there do not seem to be any symptoms, which are strictly pathognomonic for the adrenal tumors.

Pepper gives the abstract of 5 other cases, including that of De Ruyter, besides his own, to show, that a special type of congenital malignant disease exists with its own peculiar symptoms and pathological findings. The main points are the rapid course of the disease with rapidly increasing distension of the abdomen and the nearly uniform infiltration of the liver by the tumor mass. Besides the adrenal glands no other organ or part of the body were involved by the new growth. There is wasting in varying degrees, but no ascites nor jaundice nor any form of pigmentation of the skin. There is not much pain nor rise of temperature. The primary seat of the new growth may be in the suprarenal gland or in the liver.

Our case offers many points of similarity to the cases described by Pepper. Whether these cases form a special well defined type of disease, with their own peculiar symptoms and pathology, will have to be decided on the score of a large number of cases somewhat more extensively reported than some of the cases cited by Pepper.

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Variations in the Weight of Children Sent to the Mountains for Treatment.—A writer, non-medical (*Le Bulletin Medical,* October 17, 1903), records his observations of the effect of mountain-air treatment on children, and concludes that of two children of the same sex and age, the one to derive the most benefit is always the one of least weight. Of two children weighing the same at the start, the one to get the most benefit will be the oldest, and the female. Of a boy and a girl under the same relative conditions as to their body weight compared to their age, if the age of the girl is three-quarters less than that of the boy, the boy will show the greater gain. If the age of the girl equals three-quarters of that of the boy, both will derive equal benefit. If the age of the girl is more than three-quarters that of the boy, she will be the one to gain the most.—*Medical Record.*

A SIMPLE METHOD OF MODIFYING MILK IN THE TENEMENTS.

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Modifying milk for tenement-house babies in their own homes, where even a quart measure and a tin funnel are often unheard of luxuries, and where the mother is so ignorant, that she has no idea of the meaning of an "ounce," is a very different proposition from feeding these same babies in a modern hospital with a well-equipped diet kitchen and trained nurses. However, in many instances the feeding cases do as well and even better when treated at home than when in an institution. If the mother can once be made to understand the directions given and will then take pains enough to follow them, in nine cases out of ten the baby will thrive.

For the past year and a half over two hundred cases belonging to the Babies' and Lying-in Hospitals have been closely followed at home and the results carefully noted. In some instances the patients have been treated in the hospital for a short time, then discharged and the treatment continued at home, while in other cases all the work has been done in the tenements. In treating these cases the following plan has been used:—First, and perhaps most important of all, the mother of each case has had an object lesson in the preparation of the food and care of bottles and nipples. She has been made to stand by and look on while what kitchen utensils she had, necessary to prepare the baby's food, together with the bottles and nipples were being thoroughly cleaned. The milk has then been modified (and in certain cases pasteurized) for twenty-four hours' use, while she watched the entire process, the lesson not being considered complete until the food is on the ice in summer, or out of the window in winter.

The advantage of this object lesson cannot be too highly estimated. If directions are simply given the mother, either written or verbal, they will many times be like Greek to her. It is surprising how many absurd mistakes these women can make. One woman actually strained the barley water, threw away the part strained and used the lumps remaining in the sieve to add to the milk!

After the object lesson, printed directions are left with the mother and for the first week two or three calls are made to watch the mother prepare the food herself, to examine the baby's stools, to see if there has been any vomiting and to judge as far as possible whether the child is gaining in weight. The greatest disadvantage in treating these feeding cases at home is the lack of accurate scales for weighing the baby.

After the child is well started on his food, calls are made every two weeks and then once a month, the doctor dropping in at unexpected times, inspecting bottles, etc., so that the mother is kept up to the mark and the formula is changed as the child's needs require. Only 4 per cent. or plain milk mixtures are used and in nearly every case a cereal is taken as the diluent. Sometimes digested gruels are used, but generally not, as the mother can seldom afford this and unless exceptionally delicate, the baby does as well without such aid.

While babies of the better classes generally require a moderately high fat or "cream mixture," at least for a few months, it has been repeatedly demonstrated in the Out-Patient Department of the Babies' Hospital as well as in the Babies' Clinic of the Lying-in Hospital, that babies of the poor, coming as they do from a different stock, whose ancestors have been insufficiently nourished for years back, do better on plain milk mixtures, where the ratio between fat and proteids is more nearly equal than when they are fed on "cream mixtures" with a greater difference in this ratio. They vomit less, have better stools and gain more rapidly in weight.

The objection that has been made to these low fat mixtures is that in some cases the baby is apt to become constipated. If lime water is dispensed with and bicarbonate of soda used instead there is little danger of this trouble occurring, and even when it does occur it is readily overcome by the addition of malt sugar in the form of one of the best malted foods or the use of oatmeal gruel as a diluent instead of barley.

Another advantage in using these plain milk mixtures is that when the mother is too poor to buy bottled milk the excellent free milk from the New York Diet Kitchen Association can be utilized.

Dr. L. Emmett Holt's 4 per cent. milk formulæ have been employed where the ratio of fat to proteids stands 8 to 7. The following are those most often used:—

No. I.	Fat.... 0.80 per cent.	Sugar.... 5.80 per cent.	Proteid.... 0.70 per cent.
" II.	" .... 1.20 " "	" .... 6.20 " "	" .... 1.05 " "
" III.	" .... 1.60 " "	" .... 6.70 " "	" .... 1.40 " "
" IV.	" .... 2.00 " "	" .... 7.10 " "	" .... 1.75 " "
" V.	" .... 2.40 " "	" .... 7.60 " "	" .... 2.10 " "

One of the printed slips of directions left with the mother is shown below, the blank spaces being filled in when the paper is left.

HOW TO PREPARE THE FOOD FOR A BOTTLE-FED BABY.

FORMULA I.

Get bottled milk or if you cannot afford this a free milk ticket will be given you. Do not use grocery store milk.

One ounce is equal to two tablespoonfuls.

Take 4 ounces of milk after it is well stirred up, add to it 16 ounces or one pint of barley water, half a tablespoonful of sugar and a pinch of bicarbonate of soda (which is baking soda) mix this all well together and pour .... ounces into each one of .... bottles. If you cannot afford separate bottles pour the whole amount into a preserve jar or a quart milk bottle.

Cork the bottles tightly with clean cotton (which may be had for 12 cents a large roll) and stand them in a pot of cold water on the stove; bring the water in the pot just to the boiling point, then remove the pot from the stove and allow the bottles to stand in the pot for half an hour. Next cool the milk in the bottles by allowing first warm and then cold water to run over the outside of the bottles; when it is cold place the bottles on ice or in a cold place until feeding time, when the milk may be warmed by standing the bottle in hot water. Do not remove the cotton cork until you are ready to put the rubber nipple on.

TO MAKE THE BARLEY WATER.

Take two teaspoonfuls of Robinson's Barley, mix it into a smooth paste with a little cold water, add it to a pint of boiling water and boil for 15 minutes, when finished add enough water to make up the pint (for some will have boiled away), and stir in a small pinch of salt, it is now ready to add to the milk.

Give ...... ounces of this formula every ...... hours.

Some of the mothers can be induced to call regularly at the Babies' Clinic and thus a record of the baby's weight kept. The cases quoted here are fair samples of the progress tenement-house babies make when fed at home by this method.

CASE I.—E. R., age three weeks, first seen on October 13, 1903, weight, 8½ pounds. The formula given was fat 1.20, sugar 6.20, proteid 1.05, using barley water as the diluent and giving 3 ounces q. 2. h. October 27th, weight, 9 pounds 12 ounces, quantity of food increased to 4 ounces. November 3d, weight, 10 pounds 1 ounce. Formula changed to 2—7.10—1.75; 4 ounces. q. 2½ h. November 17th, weight, 10 pounds 9 ounces. Formula changed to 2.40—7.60—2.10; 4½ ounces. q. 3 h. December 1st, weight, 12 pounds 2 ounces. Patient slightly constipated so oatmeal gruel taken as diluent, instead of barley. December 29th, weight, 13 pounds 8 ounces. Stools now normal and child in excellent condition. Quantity of food increased to 5 ounces q. 3 h. This case shows a gain in weight of five pounds in about two and a half months.

CASE II.—W. G., age two and a half months, seen first December 22d, 1903, weight, 13 pounds 12 ounces. Child has been nursed up to date but mother is ill and milk supply now very scanty; baby has been losing in weight and vomiting after each meal for past two weeks. Child put on milk formula 1.20—6.20—1.05; 4 ounces. q. 2½ hrs. with barley as diluent. December 29th, patient has ceased vomiting entirely, stools normal, weight 14 pounds 2 ounces. Formula changed to 1.60—6.70—1.40. January 12th, weight, 14 pounds 12 ounces. Formula changed to 2—7.10—1.75; 4½ ounces. q. 3 h. February 5th, weight, 15 pounds 8 ounces. Quantity of food increased to 5 ounces. q. 3. h. February 12th, weight, 15 pounds 12 ounces. Child has cut two lower central incisors, stools normal, no vomiting. Formula changed to 2.40—7.60—2.10. This patient shows a gain in weight of two pounds in about seven weeks.

Many similar cases are on record in the Babies' Clinic at the Lying-in Hospital, but those given here will illustrate the progress of the average tenement-house child when fed by this simple method of home modification of milk.

SYPHILIS HEMORRHAGICA NEONATORUM.*

BY J. H. HESS, M.D.,

Chicago, Ill.

The symptom complex that was described under the title of "Syphilis hemorrhagica neonatorum" by the older authors was, with its high mortality and all the findings, laid at the door of syphilis. Since the discovery of various organisms in the blood of these infants both before and shortly after death, we are led to a reconsideration of the entire subject as in those cases with a non-syphilitic history—the question presented is: "Are we dealing with syphilis hemorrhagica or a secondary infection of a syphilitic infant?"

As early as 1854 Weber recorded the predisposition to sepsis of syphilitic infants, and in 1876, Klebs, Ritter, and Epstein, of Prague, verified those theories by finding microorganisms in the blood, which Klebs believed caused hemorrhage by plugging the blood vessels.

In 1875 Weigert described a case of navel infection in a seven days old infant.

In 1883 Peterson described a case of phlebitis umbilicalis. (Mikrococcenembolie in den Organen) in a child suffering from hereditary syphilis. No cultures were made.

Mracek in 1887 observed 132 deaths in children with syphilitic mothers. In ten mothers secondary symptoms were still present, and in none of the cases had a thorough antisyphilitic treatment been carried out. In one-third of the cases there were mild hemorrhages, but in 19 cases the hemorrhages were so severe as to warrant the conclusion that there was associated an inherited syphilis. Of the 19 cases one was still born and in 4 of the remainder the vitality was very low, as they died almost at birth. Ten more died shortly after birth, and the remaining 4 within forty-eight hours.

Pathological findings varied greatly, and included hepatitis, perinephritis, infiltration of the lungs, bone lesions, etc. The veins, of medium size, were especially the seat of changes, in some cases the lumen being almost obliterated. In the arteries of corresponding size the adventitia showed degenerative changes, while the capillaries and vasovasorum in the affected areas, showed perivascular condensation. In all cases the extravasation of blood was multiple.

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* Read before the Chicago Pediatric Society, May 17, 1904.

In 1888, Kassowitz and Hochsinger described 5 fatal cases of streptococcus infections in syphilitic infants.

Chotzen, in 1887, and Kolisko in 1888 described fatal cases of streptococcus infection in syphilitic infants.

Babes, in 1891, described a case in which at death a bacillus resembling the pneumococcus capsulatus was found in the blood and most of the organs and the streptococcus was found in the lung tissues.

H. Neumann describes several cases. The first, a fourteen-day-old syphilitic seven months baby, with syphilitic changes in the skin, hemorrhages into large and small intestines, changes in the spleen, etc., in which the bacillus pyocyaneus was found in the liver, spleen and blood. His second case was a six weeks old syphilitic child which died from uncontrollable hemorrhages from the nose and mouth. Autopsy showed hemorrhages into the pericardium and lungs, and from the heart, spleen, liver and kidneys staphylo and streptococci were obtained. The third case was aged five weeks. A plump bacillus, staining deepest at the polls, was found in pure culture in the heart, liver, spleen and kidneys.

The fourth case was an infant of seven weeks with syphilitic changes; a streptococcus was isolated from the heart, liver, kidneys and lungs.

Dungern, in 1893, in nonsyphilitic cases isolated an organism resembling Friedlander's pneumo-bacillus, but which differed some because of its virulence to animals injected, and in whom it produced hemorrhages in several repeated experiments.

Swaboda, in 1896, described 2 cases of syphilis hemorrhagica. One a case, born on February 9th, entered the hospital on the 12th, began to bleed from nose and mouth on the 15th and died on the 17th. No bacteriological examination reported. The second began to bleed from the posterior-pharynx shortly after birth.

This author asks how is the hemorrhagic diathesis here to be accounted for, and answers, certainly not by the syphilis alone, but in all probability by a septic condition which predisposes to hemorrhage, which hemorrhagic symptoms can appear before those of the sepsis.

Finkelstein, in 1895, described an infant eight days old (born in the eighth month of a syphilitic mother), that entered the Charité on November 13, 1894, with hemorrhages from lips, pharynx, arms, scrotum, etc., and that died November 16th. A bacillus resembling the bacillus hemorrhagicus Kolb was found in the heart and lungs in pure culture, which was highly virulent to guinea pigs, etc., and caused a typical hemorrhagic diathesis when injected intraperitoneally. He described a second case of hereditary syphilis with profuse hemorrhages in which streptococci were found in pure culture.

Lowenberg, in 1900, described 3 cases from the Charité.

CASE I.—Boy, age two months, no syphilitic history obtained from parents, but on the fourteenth day papules appeared on his arms and legs. Child began to vomit on the twelfth day, later vomitus contained blood which came from the mouth and nose. Later blood in stools.

Blood.—Few changes in blood corpuscles.

Gastric lavage.—Water returned blood-stained and some bloody mucus.

Autopsy.—Nephritis parenchymatosa hemorrhagica. Hyperplasia pulpæ lienis. Myocarditis parenchymatosa. *Bacteria:* Diplostreptococci in heart, lungs, liver, kidneys and bowel.

CASE II.—Boy, age ten days, mother syphilitic. On entering the hospital on its tenth day had an attack of collapse with cardiac palpitations. The following day petechiæ appeared on face and neck. Later, umbilical hemorrhage and several subcutaneous ones. Later, phlegmonous areas appeared on left thigh and groin, over chest, etc., and died on twelfth day.

Autopsy.—Omphalitis hemorrhagica, Hemorrhagica multiple cutanæ et pulmonum, hyperplasia lienis et hepatis, osteochondritis syphilitica, icterus, phlegmone cruris.

Bacteria.—Heart's blood, staphylococci in pure culture.

CASE III.—Boy died on fifth day. Marked hemorrhage from umbilicus, also from mouth, nose, etc. *Autopsy* showed an abscess behind umbilical ring, which contained streptococcus pyogenes, staphylococcus aureus and bacillus lactis aerogenes. The heart's blood gave the two former.

W. E. Conroy reports a case in which bleeding occurred from hemorrhagic vesicles, that appeared on the third day, and were generally distributed over the body, with death on the sixth day. Hemorrhages also occurred from the stomach, vagina, rectum, bladder, nose and right ear. Andronico reports a case of fatal umbilical hemorrhage, with death on the ninth day, in a syphilitic infant. Klebs described a micrococcus which he found in large quantities in nine new-born children, who had died of hemorrhage. These he injected into young rabbits and succeeded in inducing hemorrhage in them. Gottheil, in 1898, reported a case of syphilis hemorrhagica neonatorum, with eruption of the varicella type and a nevoid tumor 2 x 1 inches over the left lumbar region, also a small one on left loin, and two or three smaller ones on the limbs. Bleeding from the large nevus proved uncontrollable, two violent hemorrhages occurring during the fifth week. In the sixth week vomiting and diarrhea set in and the temperature began to rise for the first time. Blood appeared in the vomit and stools, and later in the urine, followed shortly by death.

M. Cohn reported a case with petechiæ of skin, blebs upon the tongue and hands, umbilical hemorrhage and hematemesis. William Courcy reported a case with pustular eruption, occurring fifty-five hours after birth, which rapidly became hemorrhagic, with hemorrhages from the ears, vagina, intestines and stomach. Courtois and Swift record 2 cases of paroxysmal hemoglobinuria in syphilitic children. Two children are reported in Italian literature. The first born of a woman who had a chancre on the vulva during the second month of pregnancy. Had from birth coryza and marked icterus. Some subcutaneous hemorrhages and death due to umbilical hemorrhage on the ninth day. The second started as a pemphigus, which soon became hemorrhagic, with later petechiæ, and hemorrhages from the intestines, gums, umbilicus and death.

Kilham and Mercelis report 10 cases of hemorrhagic disease of the newborn, occurring epidemic in the New York Infirmary for Women and Children, of which 5 cases were fatal and in 2 of which cases careful bacteriological studies were made, and a short-lived diplococcus isolated, resembling the pneumococcus but differing from it materially in cultural characteristics. These cases while not reported with parents' history, and probably not of syphilitic origin, tend to illustrate a relationship between sepsis and hemorrhages of the new-born. Animal inoculations with this organism did not produce hemorrhage. I. A. Abt, in 1903, reported 13 cases of spontaneous hemorrhage in new-born children. In his series Case 8 shows a history of syphilis in the mother contracted during pregnancy, the child weighed 3½ pounds at birth and lived one hour. Autopsy showed bloody fluid in the peritoneal and pleural cavities, also petechiæ in the pleura. Spleen enlarged, effusion of blood underneath the scalp, petechiæ underneath the pia mater, and a large clot of blood in the falx cerebri. In Case 2, no syphilitic history was given, but was suspected because of an osteochondritis and an atelectasis, and pneumonia in the lungs together with the fact that the child was prematurely born and poorly developed. Hemorrhages were present in the skin, lungs, thymus, thyroid, liver, stomach, intestines, suprarenals, spleen, pericardium, and pia mater. Bacteriological examination gave no results. In Case 5, presumptive diagnosis of syphilis was made because of premature birth, enlarged spleen and liver, recovery under antisyphilitic treatment and consequent development of hydrocephalus. Hemorrhagic spots occurred over the face and body.

Isham, in 1904, reported a girl baby, at birth 7¾ pounds, eleventh day cord separated, twelfth day stump bleeding; nitrate of silver, etc., applied without result. Ligation of stump controlled hemorrhage for three hours. A continuous suture, including skin margin and stump, was then taken from below upward, beyond the leak and back again, so that the ends were tied at the lower margin of the navel and firm compresses applied. The hemorrhage was arrested for thirty-six hours. At this time separation of the skin required two uninterrupted catgut sutures. After this the bleeding ceased. On the evening of the second suturing a hemorrhage appeared on inner side of left ankle; on the following day over the right internal malleolus, right tibia and on lower part of chest; later on right elbow. A few hours later a nodule appeared over right anterior tibial region, at the site of the earlier extravasation of blood. Next day curving outward of tibiæ noted, also petechiæ on neck and right cheek. Child seemed to suffer severely on being lifted. Other swellings were noted irregularly disposed about the shafts of the long bones, above the epiphyseal junctions. Child lost rapidly in weight and strength.

Treatment.—On third day after the hemorrhage, inunctions of 25 per cent. of blue ointment were used once daily, and internally, syrup of iodid of iron, two drops three times daily to baby, and ten drops iodid of potas. t.i.d. to mother. On the second day after the inunctions were begun the extravasations became paler and the petechiæ on the neck and cheek entirely disappeared. On third day legs improved and all signs of extravasation disappeared. Within a week all signs of hemorrhage had disappeared, and child was steadily improving. Of the three suggested troubles hemophilia, scurvy and syphilis hemorrhagica neonatorum, the therapeutic test confirmed the third.

Kovalevsky, in 1901, isolated a bacillus resembling the colon bacillus in all except the negative indol tests. The author had the opportunity of following this case and the subsequent examinations while at work in the Escherich Clinic at Graz at that time. The child was brought to the hospital on the third day of its life, placed in an incubator and fed at the breast of a wet nurse. Suppuration was noted at the insertion of the cord. At the end of the first week two small cutaneous hemorrhages were observed. These gradually increased in size and underwent discoloration. On the subsequent days of the child's life other hemorrhages appeared.

Autopsy.—The dura and meningeal vessels were the site of slight abscesses, most marked on the convexity. Some serosanguineous fluid was found in the pleural and pericardial cavities. The liver and kidneys were also the site of miliary abscesses and fatty changes. The spleen was enlarged and congested and the navel was the site of suppurative processes.

Bacteriology.—Several specimens of blood were taken antemortem, and in one a whole colony of short, thick bacilli were observed, and in a second specimen a few scattered organisms of the same type were found.

Cultures from the spleen, kidney, liver and dura mater showed pure growths of the same organism.

My case was as follows:

History.—Mother, Mrs. J. McN., entered hospital February 10, 1904, 11:50 P.M., in labor. After eighteen hours the child was delivered by forceps, with little difficulty, O. L. A. Total time of labor thirty-six hours. Puerparium was uneventful, the temperature remaining normal with one exceptional rise on fifth day to 100.6°F.

Baby girl born on February 11th, at 6 P.M., upon examination was apparently normal, eyes and mouth cleansed; cord dressed without hemorrhage. Weight, 5 pounds.

Second day.—Morning temperature 97.6° F. per rectum. Baby restless and crying continually. Cord redressed; no hemorrhage; diet, water and sugar of milk in weak solution, 3 ounces; urinated four times; no bowel movements.

Third day.—Morning temperature 98.8° F. per rectum; cord redressed; no hemorrhage; eyes clean; put to breast every three hours; urinated several times; passed meconium three times.

Fourth day.—Temperature not recorded. Cord redressed; no hemorrhage; eyes clean; nursed every two hours; urinated freely; bowels moved three times.

Fifth day.—Temperature, 9 A.M., 102° F.; 8 P.M., 103° F. Cord redressed; no hemorrhage; eyes clean. Did not take breast well. Nursing stopped at 7 P.M., because of slight temperature on part of mother; urinated once; bowels moved four times.

Sixth day.—Temperature 2:30 A.M., 102.2° F.; 6 A.M., 102.6° F. Respiration 60. 12:30 P.M., 103° F.; 2 P.M., 102° F.; 6:30 P.M., 100.8° F.; 9 P.M., 102° F. Baby very restless and nervous. Cord redressed; no hemorrhage; eyes clean. At 12 P.M. stool was bloody, with very little mucus; infant apparently very weak. At 6:30 a watery bloody discharge on napkin, probably urine. Baby refused to nurse and seemed in pain, threw head back, cried and whined almost incessantly. Rumbling in bowels marked. Bloody discharge again noted in napkin, but none could be collected for examination.

Seventh day.—Temperature 2:30 A.M., 104° F.; 4 A.M., 103.8° F.; 7 A.M., 104° F. Baby vomited dark bloody fluid frequently. Bloody discharge on napkin. Baby cold—sleepless, and would not nurse. Subcutaneous hemorrhages were noted below the left nipple, and over inner condyles of femur on both knees. Baby died 10:10 A.M. Cultures from heart and spleen taken at 11 A.M. Autopsy at 4 P.M.

Family History.—Mother, age twenty-four years; Irish descent; housewife. Father and mother living and well. Two sisters and seven brothers living and well. Three brothers dead, two died in infancy, cause unknown, and a third from typhoid fever, age thirty-nine. One sister died in infancy. Mother had measles and chicken-pox during childhood; pneumonia at thirteen; typhoid later and inflammatory rheumatism at sixteen years. She gave a history of sore throat and falling out of hair during past year. Profuse leucorrhea and history of small sore on genitalia about the size of a pea. Used carbolic acid douches, no other treatment. Previous history of miscarriage at three months followed by curettement.

Physical examination of the mother was negative.

Father.—Specific urethritis two years before marriage. The mother does not know that he had syphilis, but last year he went to Hot Springs and took treatments for rheumatism, as described to her, for three months.

Autopsy.—Female, age six days, autopsy made five hours after death; length, 18 inches; skin, deeply jaundiced; rigor mortis not marked; muscles poorly developed; no hair; nails poorly developed. Several antemortem hemorrhagic spots present. One on left side below the nipple, 1½ by ¾ inches in diameter. One over each of the inner condyles of femur, ⅛ inch in diameter. Skin of hands and feet exfoliating; also an antemortem bleb on left heel, noticed on seventh day. Conjunctivæ and mucous membranes jaundiced. Cord dry and no signs of infection. On incision of abdomen, thrombosis found in umbilical vein, but apparently no infection was present. The thymus was very small, but no hemorrhages were noted. Pleural cavities contained small amount of clear fluid, but there were no adhesions. Pericardium negative. Heart normal. Foramen ovale patent. Lungs negative, except few hemorrhagic areas beneath pleuræ. Thyroid glands well developed and negative. Adrenals and kidneys negative. Bladder small and seat of numerous submucous hemorrhages. *Stomach.*—Empty save for a small amount of broken-down blood. Few hemorrhagic spots, looking like minute ulcers involving the mucosa and submucous layers. Large and small intestines were the seat of hemorrhagic areas. Liver, one-quarter larger than normal, markings irregular and indistinct. Gall bladder contains small amount of bile. Pancreas negative. Spleen, large, dark and hard. Vagina uterus ovaries and tubes, negative. *Femur.*—Lower end of left femur removed for microscopical examination.

Microscopical Findings.—*Spleen.*—Large areas of infiltration by connective tissue, completely replacing splenic pulp in some regions. Thickening of vessel walls.—Large and small. *Lungs.*—Thickened blood vessels. Irregularity of epithelial layer and thickening of bronchioles. Infiltration of septæ compressing the alveoli. Desquamation of epithelium in some areas. *Kidney.*—Cloudy, swelling of tubules. Infiltration by connective tissues between tubules. Thickened blood vessels. *Liver.*—

Beneath the capsules we find areas of infiltration, hemorrhage and apparently necrosis. Great increase of connective tissue intra and inter-lobular, with displacement of parenchyma cells. Extravasations of blood and infiltrations between lobules and about vessels, with marked hypertrophy of the vessel walls themselves. *Peritoneal lymph nodes* show thickened capsule and trabeculæ, with areas of embryonic, connective tissue invading the adenoid structure. *Pancreas.*—Presents areas of great increase of connective tissue.

Suprarenal Glands.—No marked changes. *Thymus.*—Sclerosis and a few small hemorrhages. *Ovaries and Tubes.*—Apparently normal. *Stomach.*—Multiple ulcers of the mucous membrane present, mostly superficial, with infiltration of the submucous coat. Areas of infiltration between the muscular layers.

Colon.—Section shows no changes.

Urinary Bladder.—Infiltration of submucous layer with ulceration of mucous membrane. Apparent thickening of entire visceral wall.

Bones.—Guéri's line representing the area of preliminary calcification is somewhat thickened and irregular, but not to the high degree so frequently seen. The zone of calcification is very vascular and contains islands of only slightly calcified tissues.

Bacteriological Findings.—Cultures taken from the heart's blood and spleen fifty minutes after death show pure growth of bacillus coli communis. The bacteriological findings of the author were verified by Dr. L. O. Scott, of the University of Chicago, to whom I wish to express my thanks.

Pathology.—Notwithstanding the somewhat obscure parental history, the typical pathological findings justify us in a positive diagnosis of Syphilis Hereditaria; in short we find interstitial changes between the alveoli of the lungs, although in the sections examined a typical pneumonia alba of Virchow was not present; hyperthophic cirrhosis of the liver, due to increased connective tissue about the individual lobules and acini, and scattered areas of round cell infiltration; interstitial changes in the spleen, lymph glands, pancreas and kidney; ulceration and infiltration of the stomach and urinary bladder.

The above lesions were associated with marked changes in the large and small blood vessels throughout the tissues examined, and the changes at the junction of the cartilage and diaphysis in the femur, together with the other findings justifies us in the above conclusion.

Relation of Infection to Hemorrhage.—Upon a review of the cases reported which I have been able to collect, and in whose report the bacteriological examinations have been noted, we are impressed by the great variety of organisms isolated and the resemblance of their clinical courses. Briefly stated we have in cases with a distinct syphilitic history, the following organisms:—

Peterson, 1883, micrococci; Kassowitz and Hochsinger, 1888, streptococci; Chotzen, 1887; Kolisko, 1888, streptococci; Babes, 1891, bacillus resembling pneumococcus capsulatus; Neumann, H., 1891, bacillus pyocyaneus in the first, staphylo- and streptococci in the second, and streptococci in the third and fourth cases.

Finkelstein, 1895, bacillus resembling bacillus hemorrhagicus Kolb, and a second case with pure cultures of streptococci; Lowenberg, 1900, diplostreptococci in the first, staphylococci in the second, and streptococci, staphylococci and bacillus lactis aerogenes in the third case. Author's case of bacillus coli communis in pure culture.

And in those where *no syphilitic history* is reported, or the same denied, among others:—

Dungern, 1893, an organism resembling Friedlander's pneumobacillus; Klebs', 1891, micrococcus hemorrhagicus; Kilham and Mercelis, a diplococcus resembling the pneumococcus; Kovalevsky, 1901, bacillus of coli communis variety; Gartner, bacillus enteritis.

Summary.—In these cases syphilis is undoubtedly an important factor, in some acting as a direct cause due to changes in the vascular system, not alone in the blood vessel walls and the perivascular tissues, but in the blood as well. The former changes have been carefully studied, but the blood conditions in these cases have as yet received but a very moderate amount of attention. Again, when we reconsider our cases and carefully study them in conjunction with some of the many cases reported of "Spontaneous Hemorrhage of the New-born," in apparently nonsyphilitic infants, a few of which cases I have abstracted in this paper for comparison, we find that those of both classes who live a few days run a very similar course, in that a child, either full term or more frequently premature, who may have been nursing fairly well and having a normal or subnormal temperature, becomes suddenly indisposed, refuses its food, shows temperature, begins to emaciate rapidly, has cutaneous, aural, nasal, gastrointestinal or vesical hemorrhages, which in most cases, especially in premature infants, lead with increasing severity of symptoms to a fatal issue. None the less interesting is the fact that in both syphilitic and nonsyphilitic cases the more recent writings show the presence of microorganisms of various types in the blood and viscera at autopsy, and several cases are on record (Kovalevsky, etc.) where they have been found antemortem.

In many cases where death occurred shortly after birth in syphilitic infants (Mracek) with hemorrhage, and where there had been no opportunity for an extra-uterine invasion, we can have but one or both of two etiological factors. First, the direct inheritance of syphilitic changes from one or both parents at the time of fertilization, or a later transmission through the placental circulation; second, a septic infection in a fetus which has previously been infected by the syphilitic virus through the maternal circulation or an infection traveling up the maternal passages, both of the second class can, in most instances, be excluded by the absence of symptoms on the mother's part.

In conclusion I believe that while the most of our cases of "spontaneous hemorrhage in the newborn" are cases of extra-uterine infection through one of many channels by a non-specific organism, others are directly due to the action of the syphilitic virus and its consequent changes in utero on the fetal vascular system, and, therefore, true causes of "syphilis hemorrhagica neonatorum," illustrated by Mracek's series of cases; while the first variety are better classified as, "Syphilis Hereditaria, with Hemorrhage due to Secondary Infection."

Treatment.—Two most important factors present themselves for recognition when we come to consider therapeutic measures. First, Is the quantity of blood lost sufficient to cause death? In not a few cases the quantity is considerable, necessitating where possible rational local measures at least until systemic treatment can be inaugurated and become effective. The second factor, general toxemia, appears vastly more important, and demands our greatest consideration in selecting therapeutic remedies, ascertaining where possible if it be a simple luetic infection or an acute sepsis upon a luetic basis.

In every instance treatment should at least be instituted for the relief and cure of the inherited syphilis by both the indirect and direct methods. The first consists in the introduction of remedies into the child's stomach, through the medium of the milk of the mother or wet nurse; and the second, in the administration of the drug to the child by the mouth or through the skin.

The indirect method is usually employed by administering large doses of the iodids to the mother, for instance, potassium iodid, ten drops three or more times daily. Mercurials are without effect when administered in this way. *The direct method,* through the skin by inunction, leaving the surplus in situ for absorption, or application of ointment, or mercurial plaster for absorption, a function performed very rapidly by the skin on account of the body temperature. A method which I first saw applied in the Widerhofer Clinic at Vienna, and which I invariably use in my treatment of hereditary syphilis, either alone or in conjunction with internal indication, with very gratifying results, is the application of Dr. Unna's emplastrum hydrargyri mull, using a piece two by three inches over the abdomen, to be replaced at the same, or in a different location, every second day. Where mercurials are administered by mouth, this is probably most easily accomplished by the administration of pulvis hydrargyri cum creta ½ to 1 grain, or calomel grain $^1/_{10}$ to $^1/_{20}$ three times daily. This treatment should later be used in conjunction with tonics.

Other forms of internal medication have given no results in these cases, and even when antisyphilitic treatment is instituted early, the mortality is very high in all cases, as these infants are very susceptible to secondary infections, because of a diseased liver, spleen, lymph nodes and other vital parts, the lowered resistance of the skin, its predisposition to ulcerations and the general vascular degeneration.

The local treatment of the hemorrhages by styptics; packing adrenalin chlorid, gelatin, etc., are of little value; unless we can influence these cases systemically, we can hope for little or no result. Gelatin may be used 10 per cent. in a normal salt solution, and the solution of adrenalin chlorid in from 1 to 1,000 to 10,000. Suturing apparently only offers new points for hemorrhage and frequently causes sloughing. Our greatest hope lies in the direction of prophylactic treatment of the mother during pregnancy, and this should be carried out systematically in all suspicious cases.

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Clinical Memorandum.

TETANY IN AN INFANT, WITH PERSISTENT CONTRACTURES.*

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In reporting the following case as one of tetany I follow the classification of such eminent American authorities as Holt, Koplik and Griffith. It has been a much mooted question whether cases in which there is persistent bilateral contractures should be included under the term tetany, or whether the term should be reserved for cases where there is a marked intermission in the spasms. The earlier writers on these contractures restricted the term tetany to an intermittent tonic spasm of certain groups of muscles, but now the majority of writers, at least on diseases of children, accept the form where the contractures are persistent, as the same affection as where the contractures are intermittent.

The definition given by Koplik is a very comprehensive one, he defines tetany as "an intermittent or persistent, more or less painful, tonic spasm of groups of muscles of the upper and lower extremities."

The etiology according to our present knowledge of the affection, is still obscure, but in infancy there is a recurrence of certain conditions that would seem to mark them as at least predisposing causes. Rickets is almost invariably found, and is very frequently associated with marasmus, and some chronic intestinal disturbance, manifesting itself either as diarrhea or constipation. Tetany is not apt to occur in robust infants but in those whose systems are drained by some previous debilitating disease. Rilliet and Barthez state that they have observed the contractures frequently following some previous disease, as pneumonia, bronchitis or enteritis. Tetany very rarely results from burns or wounds, in this respect differing markedly from tetanus.

No constant pathological changes have been demonstrated, although the popular idea has been that it is a motor neurosis dependent upon some changes in the motor cells in the spinal cord and medulla.

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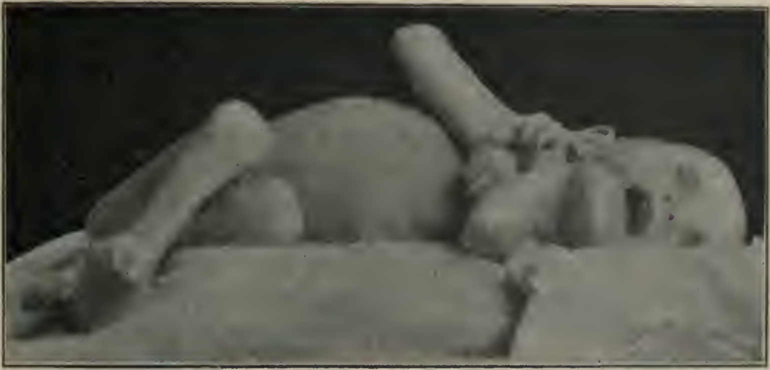
* Read before the Philadelphia Pediatric Society, June 14, 1904.

All writers are agreed upon the following diagnostic symptoms: The bilateral spasms are limited to certain groups of muscles, generally in the upper and lower extremities, and are not accompanied by unconsciousness and do not relax during sleep; the muscles affected are painful when touched; the reflexes are exaggerated. The remarkable symptom discovered by Chvostek and the phenomenon of Trousseau, and the exaggerated electrical excitability of the nerves studied by Erb, are not all or any of them invariably present, but if they are present they leave no room for doubt of the diagnosis. The position of the hands and feet have been variously described. All writers are agreed that the positions assumed by the hands and feet are very characteristic of this affection, and, indeed, most writers limit their description of the position assumed to one form. The classic description of the position usually assumed is as follows: The fingers are flexed at the metacarpo-phalangeal joint, and the phalanges extended and drawn together; the thumb is adducted entirely across the palm, the wrist is also sharply flexed and the whole hand is drawn to the ulnar side. Trousseau compared the position to that of the obstetric hand. The clenched hand is, however, also described by J. Lewis Smith, Koplik, Dercum and others as sometimes occurring and as also characteristic of this affection. The feet are rigidly extended and the first phalanges are extended and the second and third ones are either extended or flexed, as are the fingers; the dorsum of the foot is strongly arched. The spasms may be limited to the hands and feet—and in infants the spasms are generally so limited—but in many cases they extend to the elbows and shoulders, or knees and hips, and in severe cases the muscles of the neck, trunk and face may be involved.

The case I have to report occurred in a female infant of nine months, who was admitted to the children's ward of the Woman's Hospital, April 20, 1903. The family history was negative except that the surroundings of the patient were very poor and squalid. She had been breast fed until about five weeks before admission, when she had a convulsion and the physician who was summoned was said to have ordered the breast feeding stopped and condensed milk substituted. A second convulsion occurred on the following day, but the eruption of her first tooth seemed to relieve the irritation somewhat and she had no more convulsions. The child was first seen by Dr. Josephine Walton on April 11th, when she found the characteristic rigidity of both upper and lower extremities, which had continued, according to the account given by the mother, without intermission since the time of the first convulsion, which was about the middle of March. Dr. Walton did not see the patient again until April 20th, when she sent her to the Woman's Hospital and placed her under my care.

On examination I found the following conditions: An emaciated, anemic looking infant, weight 14⅛ pounds, lying perfectly motionless, but constantly whining in a loud voice. The hands were tightly clenched over the thumbs so that the fingers dug into the palms of the hands, and the skin of the palms was red and tender looking from the long pressure and had the appearance of mucous membrane; the hands were flexed at right angles to the wrist and turned toward the ulnar side; the elbows were stiff and closely pressed against the trunk; and the shoulders were also stiff and rigid. The feet were rigidly extended and the toes curled under, so that the dorsums of the feet were arched and also edematous and blue in appearance. The knees and hips were also stiff, the legs were bent on the thighs and the thighs on the abdomen; the thighs were also adducted, so much so that the thighs crossed each other. The head was drawn back and was rigid and the muscles of the angles of the



PHOTOGRAPH OF CASE OF TETANY, SHOWING CHARACTERISTIC ATTITUDE OF HANDS AND FEET.

mouth were retracted, giving the child a grinning expression. I tested the muscles supplied by the facial nerve as described by Chvostek, and obtained a slight contraction of the orbicularis oris, but not of the muscles over the zygoma. It was impossible at any time to test for the presence of Trousseau's symptom, that is, by making pressure on the large blood-vessels or nerve trunks of the extremities, for the parts were too rigidly contracted to show any further spasm by such pressure. The electrical reactions were not taken. The knee-jerk was increased.

The child showed marked signs of rickets. The rosary was prominent, and there was a spot of cranio-tabes in the left lamboidal suture and the abdomen was swollen and tender, and both liver and spleen were enlarged. The breathing was labored, and the child experienced great pain when handled.

At the time of admission the temperature was 97.8° F., the pulse 116 and the respirations 36. The abdominal veins were prominent, and the mesenteric and cervical glands were enlarged. The bowels were very constipated on admission and continued so. Large coarse râles were heard all over the chest posteriorly.

Under our treatment her general condition seemed for a time to improve, and she took her nourishment better, but the spasms remained the same. On May 3rd, I heard harsh bronchial breathing and diagnosed pneumonia of the lower lobes.

The child died in general convulsions on May 7th. The contractures, which probably developed at the time of the beginning of the attack, about March 17th, continued without interruption up to the time of her death, a period of over six weeks.

The postmortem examination was confined to the thoracic and abdominal cavities, and it was found that broncho-pneumonia existed in the lower lobes of both the right and left lung. The liver, spleen and kidneys were all enlarged and softened and showed inflammatory changes.

The case in its etiology showed the usual association of rickets and alimentary disturbance that are common in tetany in infants. The age, nine months, and the season of the year, early spring, were probably also factors in the development of this case of tetany.

This case is interesting because of the long continuance of the spasms. It seemed very remarkable that such an emaciated and rachitic infant could continue to exist for over six weeks with marked spasms of so many of the muscles.

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DURATION, COURSE AND TERMINATION OF GLYCOSURIA IN CHILDREN.

Glycosuria may be a manifestation of quite discrepant factors. It deserves the attribute "diabetic" in those instances only in which other symptoms of diabetes, as polyuria, excessive thirst, progressive emaciation, decline of bodily strength, etc., are, or have been, exhibited. In nurslings, that is in children under one year of age, I have never seen a genuine case of diabetic melituria; the diabetic symptom-complex occurs so rarely during the first year of life that I entertain serious doubts as to the authenticity of the diabetic nature of the great majority of glycosurias which are on record as having taken place during that early period of life.

The nondiabetic glycosurias at the beginning of the earthly career are not so uncommon. We will not be far out of the way by declaring that the glycosuria of nurslings is nondiabetic in almost every instance. The pertaining statistics have to be interpreted accordingly.

Wegeli found among 108 cases of diabetes during childhood, 3 cases which occurred during the first year of life; according to the statistics of Saundby among 159 cases of diabetes in children, 2 had ensued in babies less than one year of age; of 147 children affected with diabetes, 4 as recorded by Leroux, were under one year; several clinicians reported instances of supposed diabetes which supervened between the fifth and tenth months; one observer diagnosed the disease in a child one month old, and another in a baby two weeks after its birth. I find that in New York City, from 1889 till 1901, thirteen deaths from diabetes have ensued in children less than five years of age, of which four occurred during the first twelve months of life.

Glycosuria is of more frequent occurrence as the child advances in age. The same is the case with the syndrome of diabetes. Cases of glycosuria starting during the second, third, fourth, or a later year of life, are not rarely diabetic in character. As one of the causes of diabetes in early childhood, after the first year of life, I have assigned a developmental anomaly of the brain or nervous system. One may advance various other etiological theories; on this occasion, however, we must forego to dwell upon them.

The prognosis of infantile glycosuria is primarily dependent upon its character. It is very gloomy if the glycosuria is of the diabetic type. Almost all diabetic children succumb within one year from the onset of the malady. Curt Stern has seen seven children perish within a month from the onset of diabetes, seventeen within a year. Wallach and von Starck had little patients who kept alive for five months; Becquerel asserts that a boy nine years old, died six days after the first appearance of diabetes. The short duration of infantile diabetes is evinced by the following figures of Bogoras:

In 38 children under 5 years of age the duration of the disease was 1 month in 14 cases, 6 months in 19 cases, 1 year in 3 cases, and 2 years and over in 2 cases. In 35 cases observed in children between 5 and 10 years of age the duration of the disease in 5 cases was 1 month; the duration in 14 cases was 6 months, and in 16 cases it was 1 year and over. Ninety-three cases were observed between the ages of 10 and 15 years. The disease lasted 1 month in 18 cases, 6 months in 20 cases, 1 year in 9 cases, 2 years in 21 cases and longer than 2 years in 25 cases.

These figures do not materially differ from my own. Occasionally, cases of diabetes in early childhood run a somewhat protracted course; they have been designated as chronic cases to distinguish them from those which terminate lethally within a comparatively short period. The chronicity of such cases, however, cannot compare with that of diabetes in the advanced stages of life. Among the cases recorded by Wegeli, four and a half years is the maximum duration of life after onset of the disease. Curt Stern knows of instances of juvenile diabetes which lasted longer than five years before death ensued. Diabetes developing during early adolescence, between the twelfth and sixteenth year, proves not infrequently a rather mild affection. In my experience, a fatal issue is by no means so frequent as is the case when the affection supervenes, for instance, between the twentieth and twenty-fifth years of life. I know of some instances of true diabetes, diagnosed in the beginning period of adolescence and continuing for eight, ten and more years without retarding the patients' physical development and not preventing them from being self-supporting. I know of a girl who, when twenty-six years old, after having been a diabetic for upwards of ten years, was the sole bread-winner of the family.

Juvenile diabetic glycosuria, however, may permanently abate and cures from diabetes in infancy and childhood are on record. Garnerius reports a case of diabetes in a nursling which was cured. Of the 108 cases of Wegeli 15 are said to have been cured, but only 6 of the latter remained sufficiently long under observation to warrant the assertion of a cure. Again, there is no positive proof that the cured cases were instances of genuine diabetes. Most cases of cured infantile diabetes, including the interesting one of Schmitz cited hereafter, were in reality such of nondiabetic glycosuria.

The direct causes of death of children affected with diabetes are digestive disorders terminating in dyspneic coma or marasmus or intercurrent diseases, frequently of the respiratory organs. Pulmonary phthisis rarely supervenes during infantile or juvenile diabetes.

Nondiabetic glycosuria is a much more frequent condition during childhood than is the diabetic melituria and, fortunately, it evinces in the rarest instances the pointed pathological significance of the latter. Nondiabetic glycosuria occurs much oftener in children than is generally supposed. In cases even where the nondiabetic glycosuria has attained a certain degree of chronicity, its presence is not infrequently overlooked. The main reason for this is that pronounced constitutional symptoms are frequently wanting. Again, the disease of which the glycosuria is a symptom is often enough recognized and treated, but the presence of glycosuria, in itself, perhaps an unimportant feature in the course of the underlying disorder, is not suspected. Were we to examine for urinary glucose in every instance of an infectious disease, especially when the acute phenomena have subsided, or in every case of traumatism, the glycosuric symptoms would be more often met with. Of Wegeli's 108 collected cases of (mostly nondiabetic) juvenile glycosuria an injury stood eleven times at the foundation of the symptom. Most cases of simple glycosuria in children with which I became acquainted had been directly preceded by influenza, rubeola, scarlatina, diphtheria, enteric fever, meningitis, pneumonia, acute articular rheumatism, gastroenteritis or by some other acute disorder.

Cases of simple glycosuria, as a rule, endure as long as their etiological substrata. The nondiabetic glycosurias of childhood cease when the effect of the trauma or that of the acute disease subsides. The glycosurias *per se* do not materially affect the general nutrition, but their underlying factors may. The children do not die from the effect of the glycosuria, but from that of the pathological state in the wake of which glycosuria makes its appearance.

It is a notable fact that many cases of nondiabetic juvenile glycosuria become permanently cured. An instructive case in this respect is one related by Schmitz. The patient was four years old; mother and older sister were diabetic. A rigid diet was continued for some time. As the glycosuria did not recur and the child developed nicely the diet became more liberal from year to year until finally, the child partook of the same food as other children, fruit, chocolate, puddings, etc. Even then the glycosuria did not return. The child grew into womanhood, married at eighteen and became the vigorous mother of two healthy children. In twenty years (1892 when the report was written) the glycosuric phenomena had not reappeared.

This case was apparently one of simple glycosuria following an acute disease. The diabetic syndrome was never exhibited. Kindred cases are of not infrequent occurrence, but the (accompanying or subsequent) glycosuria is simply overlooked. Such cases usually make an uninterrupted recovery; at other times, the glycosuria abates but another concomitant phenomenon becomes aggravated or a new pathological condition is ushered in. In exceptional cases transformation of simple into diabetic glycosuria may take place, well-authenticated pertaining data, however, I did not encounter.

Recapitulating, we find that diabetes mellitus probably does not occur in nurslings, that in children below twelve years of age it almost always terminates fatally, that nondiabetic glycosuria is of more frequent occurrence than is generally accepted, that the majority of cured cases of supposed diabetes are such of simple glycosuria, that nondiabetic glycosuria does not, as a rule, make any inroads upon the general constitution of the little patient and that infantile glycosuria, if uncomplicated, remains without material influence upon the future life of the individual.

HEINRICH STERN.

Bibliography.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By **Prof. Dr. Carl von Noorden.** Part V. Concerning the Effects of Saline Mineral Waters on Metabolism. By **Prof. Dr. Carl von Noorden,** Frankfort, and **Dr. Carl Dapper**, Bad Kissingen. Pp. 92. New York: E. B. Treat & Co. 1904. Price 75 cents.

This little volume includes a thesis of Dapper's published eight years ago from von Noorden's clinic and later studies of both authors; those of Dapper conducted in his sanatorium in Kissingen, and those of von Noorden in the Municipal Hospital in Frankfort, and also upon private patients. The five chapters of this volume deal with the following subjects: (1) The Influence of Saline Mineral Waters on Gastric Secretion. (2) The Effect of these Waters on the Absorption of Food and particularly on the Digestion of Fats. (3) The Influence of the Waters on the Metabolism of Proteids. (4) Their Influence on the Excretion of Uric Acid. (5) The Use of Fruits, Salads, Vinegar, etc., in the Course of Water Cures. These subjects of lively interest to all dealing with the problems of metabolism and nutrition, or interested in Water Cures, are handled in the peculiarly simple, direct and instructive way that is characteristic of these volumes. The conclusions reached are as original and revolutionary as those of von Noorden previously noted with relation to the dietetic problems of nephritis. Thus the authors find that there is no ground whatever for the long-taught antipathy between these mineral waters (Kissingen and Homburg) and a dietary rich in fat, that the digestion of fat is favored rather than hindered by their use. Likewise that the use of these waters does not increase nitrogenous metabolism, but does increase the excretion of uric acid. A great deal of painstaking labor is reported and the results of it given in a brief, convincing form. One finds this volume quite as interesting and instructive as its predecessors and, therefore, well worth reading.

Les Infections Digestives des Nourrissons par le **Dr. P. Nobécourt**, ancien Chef de Clinique adjoint de la Faculté de Médecine de Paris, Chef du Laboratoire de l'Hospice des Enfants-Assistés. 16mo, pp. 210. Paris: A. Joanin et Cie. 1904. Price, 2*f.* 50.

This handy little volume is the first of a series of short treatises on practical medicine to be published under the general direction of Prof. Hutinel, the well-known pediatrist. Dr. Nobécourt takes up first the consideration of the bacteria present in the normal intestine and their function in digestion. Next he considers the microbes present in gastroenteric infections. He concludes this chapter with the remark that the bacteriology of infantile digestive infections is far from being determined, and that the majority of these disturbances are caused by common bacteria which, under certain conditions, take on pathogenic properties, rather than by any special germs. The most valuable chapter is that on Treatment, in which are given the latest ideas of the best continental pediatrists. The advantages of the *diète hydrique* first employed systematically by Netter in 1873, are clearly set forth. It is very interesting to note that the measures advised, the withdrawal of milk, lavage of the intestine or the stomach, hydrotherapy for fever and the very gradual return to milk by way of cereal gruels and broths, are precisely those practised in the best children's services in New York.

The book is a good one to carry in the pocket during the summer season.

Traité des Maladies de l'Enfance. Second edition. By **J. Grancher**, Professor in the Faculty of Medicine of Paris, etc., and **J. Comby**, Physician to the Hospital for Sick Children, etc. Vol. II. Pp. 964. Paris: Masson et Cie. 1904.

The second volume of this great work is devoted to the considerations of the diseases of the alimentary and genitourinary tracts. The list of authors bears out fully the announcement of the prospectus that the work would be of an international character; for while the majority of the writers are, of course, French, we find on the list the names of Fede, of Naples, Bokáy, of Buda-Pesth, Hirschsprung, of Copenhagen, Awaga, Lynch, and Viñas, of Buenos Ayres, Moncorvo, of Rio Janeiro, Concetti, of Rome, Ashby, of Manchester, and finally, our own Jacobi and Northrup. This list of contributors is of itself a guarantee of the high character of the work to which they have given the benefit of their special knowledge. The encyclopedic character of the work is impressed upon us by chapters devoted to such themes as sarcoma of the intestine, diseases of the pancreas, cancer of the stomach, Addison's Disease and filiariasis, etc.

All the articles are exhaustive and to most of them the bibliography is appended, a valuable feature in books of this kind. The arrangement of the articles is rational and satisfactory.

In such an exhaustive work it is not easy to pick out the best parts, but the articles of Méry on Tuberculous Peritonitis; of Ashby on Stenosis of the Pylorus, and of Bokáy on Retropharyngeal Adenitis and Abscess are notable. Dr. Jacobi describes Tumors of the Peritoneum with characteristic learning, and Dr. Northrup writes the interesting article on Cyclic Vomiting.

The paper and press-work are excellent, but we note the scarcity of illustrations, the few that are given only making the general absence of them more noticeable. Thus, in the opening chapters on the various forms of stomatitis, a few good illustrations would add greatly to the value of the work. Without them the descriptions are of very little value.

Electro-Diagnosis and Electro-Therapeutics. A Guide for Practitioners and Students. By **Dr. Toby Cohen**, Berlin. Translated from the Second German Edition and edited by **Francis A. Scratchley, M.D.**, New York. With eight plates and thirty-nine illustrations. New York and London: Funk & Wagnalls Co. 1904.

This is an authorized translation with reproduction of the original plates of Dr. Cohen's well-known work. The fact that the author, as one of Dr. Mendel's assistants, has taught the subject for several years, in substantially the manner here presented, should be sufficient warrant for its English reproduction. It is a clear, concise and practical exposition of the present accepted methods in electro-diagnosis and electro-therapeutics and should form a necessary part of the student's equipment in neurological study. Such a work so largely given over to technique in electrical application in health and disease, should be especially valuable to the pediatrist, in whose work the methods of electrical investigation and treatment are important but difficult. We unreservedly recommend the work so excellently translated and edited by the American author, Dr. Scratchley.

The Mother's Manual. A Month by Month Guide for Young Mothers. By **Emelyn Lincoln Coolidge, M.D.,** Visiting Physician of the Out-Patient Department of the Babies' Hospital; formerly House Physician of the Babies' Hospital, New York; Physician-in-Charge of the Babies' Clinic of the Society of the Lying-In Hospital, New York. Pp. 261. New York: A. S. Barnes & Co. 1904. Price $1.00.

This useful little book is one of the Woman's Home Library series edited by Margaret E. Sangster. Dr. Coolidge has varied the arrangement usually found in these books for young mothers, and has endeavored to give by months what should be known about the development and care of the infant. In this way the child is carried up to the seventh year. All the customary minor ailments and diseases of childhood are discussed, and sound, up to date advice is given, without technicalities, so that even that helpless, anxious creature, the young mother, may understand and do the right thing. Especially to be commended are the simple rules for feeding, and the advice about the discipline and moral training of infants and young children, as well as the suggestions as to their mental pastimes.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by **Hobart Amory Hare, M.D.,** assisted by **H. R. M. Landis, M.D.** Vol. II. June, 1904. Pp. vi.-334. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1904. Price $6 per annum.

Based on data gained from 65 cases of infantile scurvy, observed personally, Heubner has carefully reviewed the literature of the subject. These cases were collected over a period of twenty-six years. The youngest case seen was a baby of five months and the oldest was fifteen months. In 19 cases the milk was furnished pasteurized by a Berlin dairy and again cooked, sometimes in a Soxhlet apparatus. Comparatively few of the cases had been given patent foods.

In pathology Heubner accepts the findings of Schmorl and Nauwerck. In 19 cases in which rachitis was noted 15 cases showed slight changes, 2 distinct rachitis and 2 no signs. The treatment is the one so well known—fresh uncooked milk and fruit juice.

Interesting articles on rheumatoid arthritis and on the diseases of the blood are timely and give the latest literature.

Society Reports.

THE PHILADELPHIA PEDIATRIC SOCIETY.

Stated Meeting, Tuesday, May 10, 1904.

PRESIDENT DR. J. H. JOPSON IN THE CHAIR

DR. ROWLAND G. FREEMAN, of New York, by invitation addressed the Society on the

"CARE AND FEEDING OF CHILDREN AFTER THE FIRST YEAR."

Dr. Freeman's paper appeared in full in the June ARCHIVES OF PEDIATRICS, page 401.

DR. EDWIN E. GRAHAM said that he had noticed that Dr. Freeman had recommended pasteurizing the milk taken by the child during the second year. It has been Dr. Graham's custom to stop pasteurizing the milk at the end of the first year, when the milk-supply is thoroughly reliable; and to continue pasteurizing, subsequently, only during the hot summer months. It has also been his habit not to increase the diet during the summer, unless the child is in a cool climate or is at least two years of age.

He stated that in convalescence from acute diseases he had frequently obtained excellent results from rectal alimentation, which relieves the stomach from strain at a period during which it is extremely susceptible to strain. It must be remembered that the rectum absorbs, but does not digest. Albumoses are readily absorbed; also peptones, if well diluted. Foods should be more or less peptonized before being used as a nutrient enema.

DR. GRAHAM had likewise had very satisfactory results from massage, particularly in constipation; and he considered that, as a rule, massage is not sufficiently appreciated by pediatrists. He has found it valuable in many conditions, such as inanition and chronic gastrointestinal disease; and when there is unequal development of the limbs of the two sides. Massage increases vigor, induces appetite and sleep, strengthens the circulation, and raises the temperature of the part manipulated. The contractile power of the muscles to electricity is also increased; the circulation in the lymphatics is improved; and the nervous irritability is lessened. Massage is especially beneficial for delicate children, and the tedious convalescence of such children is often distinctly hastened by daily massage.

Dr. Graham also referred to the important function that the physician may, at the present time, assume in the moral and mental training of the child, especially in relation to the literature furnished it; condemning the custom so generally prevalent, even in the better classes, of supplying young children with cheap literature gaudily illustrated.

Dr. J. P. Crozer Griffith said that Dr. Freeman's views correspond quite closely with his own. In feeding children, after the first year, there are two great errors. The first is fool-hardiness in overfeeding; and the second, the direct contrary, is over-caution. The first is met with most frequently in the lower and middle classes, but is also common in the upper. The chief fault is in giving too much starchy food. Excessive caution is less common, but is not infrequent; the parents being afraid to take the child off a diet that has once been prescribed and found to agree with it. The consequence is that the child gets too little food, and does not grow properly.

French writers have insisted a great deal upon the importance of preventing the development of the gouty diathesis by excluding from the diet meats, etc.; but Dr. Griffith considers this course more theoretical than practical, and is inclined to give more meat than Dr. Freeman recommends. Dr. Griffith admitted, however, that individualization, in regard to this point, is very important. In general, it has been his experience that flatulent dyspepsia, due to an excess of starches in the food, is of great frequency in children over two years of age. He agreed with Dr. Freeman that eggs are usually given too early, and thinks that they should not be used before the fifteenth month. He had grown more cautious about using potatoes, finding that they often disagree; and he does not now allow them before the eighteenth month.

Dr. Thompson S. Westcott said that he was very glad to note the conservatism of Dr. Freeman, especially in the dietary of the second year; and that he entirely agreed with Dr. Freeman. As Dr. Griffith had remarked, great caution is necessary in the use of potatoes all through the second year. His experience had also convinced him that it is irrational to give a baby whole milk merely because it has reached the age of twelve months. Most of his patients that have required careful feeding during the first year have not been able to digest whole milk until the age of fourteen or fifteen months. After all, whole milk should be regarded as the final modification in a series of formulæ that are to be prescribed progressively, in accordance with the child's digestive capacities. It has often been Dr. Westcott's experience that some slight dilution has been necessary until well toward the end of the second year, and that some children can never acquire the ability to digest undiluted milk. He believes that in some cases this depends upon an inability to assimilate so much fat as 4 per cent. In these cases, he has found partial skimming of the milk to be of decided value. Such children usually have a history of serious difficulty during the first year in digesting ordinary modifications, in which the mistake of forcing fat percentages too high is frequently made. This is undoubtedly the case in many instances in which milk is thought to disagree, and is therefore discarded altogether; whereas, a judicious modification of the fat-percentage would have promptly remedied the difficulty.

Dr. D. J. Milton Miller thought that feeding during the second year is, on the whole, more difficult than during the first. The chief trouble is in the tendency of parents to use too much farinaceous food, especially potatoes and oatmeal. These foods have become a great enemy to both the child and the adult, on account of the enormous variety of breakfast-foods that have been foisted upon the public. Of these, very few are suitable for children, principally because they are not cooked sufficiently. The chief suitable ones are hominy-grits, oatmeal and cracked wheat. All these should be thoroughly cooked.

Dr. Miller considers it advantageous to dispense with the nine or ten o'clock night feeding as soon as possible after the first year. He has found that constipation is often quickly relieved by diluting the milk a little, particularly with gruel. He referred to the frequent refusal of children to take any considerable variety or quantity of food during the second year, and to the difficulty in overcoming this. The great danger among the better classes, however, is, as Dr. Griffith had remarked, that the parents err on the other side and limit the child's diet too strictly. In children with a tuberculous ancestry especially, it is important to allow a fairly free diet and to encourage the child to eat a good deal. Dr. Miller believes that after the third year all children should be allowed to eat any kind of wholesome food, unless there is some particular contraindication.

Dr. Walter Lester Carr, of New York City, said that he has been accustomed to using full milk after the first year; although, in certain individual cases, he has found it advisable to modify the milk slightly. His experience, also, has been that parents tend to overdo the use of cereals; and that they are especially likely to cook them too little, chiefly owing to the statements contained in the advertisements of these cereals. He referred to the frequent use of rice-pudding as a dessert, and stated that he had often found it to disagree with children. He noted that Dr. Freeman had recommended giving orange-juice at a meal that includes milk. Dr. Carr considered this disadvantageous, as he thinks orange-juice likely to upset the stomach when given with milk. He was accustomed to giving it in the interval between two meals, usually allowing crackers or bread with it. He agreed with Dr. Freeman in considering beef-juice an unsatisfactory portion of the diet. The effect that he has observed from it is the same as that produced by small doses of alcohol. He considered scraped beef much better. His custom was to omit the nine o'clock, P.M., feeding after the fifteenth or sixteenth month, but he usually continued it up to this time. He had had much more experience with overfeeding than with underfeeding, and had often found that children whose digestions were out of order did better when he took out a feeding or two.

Dr. S. McC. Hamill agreed with Dr. Freeman in nearly all his views. He had noted, however, that Dr. Freeman condemned prunes and apple-sauce. He asked upon what evidence this opinion was based. Personally, he used both after the second year with, he thought, great advantage. Dr. Freeman had recommended the use of the bicycle. Dr. Hamill considered bicycling an objectionable form of exercise, unless carefully controlled. He thought it particularly important to have children use exercises that develop the arms and the upper portion of the trunk, rather than the legs; such development is frequently neglected, whilst the legs take care of themselves. He believed that, as a rule, pediatrists are not sufficiently careful and explicit in regard to the question of fresh air, particularly the admitting of fresh air into bed-rooms. Among the poor, especially, where it is almost impossible for them to afford sufficient covering, the admission of fresh air is more difficult to accomplish. Many of the diseases among this class are chiefly the result of neglect in attending to this point.

Dr. D. L. Edsall said that, while he fully agreed that the usual error in feeding young children is the excessive use of carbohydrates, he was convinced that too little thought has been given to the possibility that disturbances of digestion and of the general health may be due to the excessive use of fats, or to the inability of the child to digest fat properly. He had repeatedly found that children with gastrointestinal fermentation, and with languor, lack of energy, and other indefinite disturbances in health, have done very well when the amount of fat has been limited or the character of the fats used has been carefully regulated. In a series of these cases he had made some observations of the urine and feces, noting a great deal of fermentation in the latter; and the presence of large amounts of indican, phenol, volatile fatty acids, etc., in the urine. All the abnormalities disappeared after practically no treatment except restriction of the fats. Dr. Edsall especially noted that these disturbances are likely to occur in children who are rather thin and look ill-nourished, and who often have been put by their physicians on a fairly free fat-diet for the purpose of attempting to increase their weight. He also noted a number of cases in which, together with an appearance of poor nutrition and rather indefinite ill health, there had been a most offensive odor to the breath; one child in particular having been practically ostracized from his family on account of his offensive breath. This patient had been treated by nose and throat specialists, and by various other doctors; and it had been repeatedly recommended that he take more fats to improve his general health. The exclusion of butter and cream, together with skimming the milk and largely excluding other fats, overcame this condition and the child's general health improved greatly. Dr. Edsall believed that the butter-fats, as found in butter, cream, and milk, are those that cause the greatest amount of trouble in mose cases, chiefly on account of their tendency to contain a large amount of the lower fatty acids.

Dr. W. D. Robinson asked Dr. Freeman to mention the regulations adopted by him in regard to the temperature of the water given the child to drink, and the amount of water he allows it to have. In the treatment of constipation, Dr. Robinson had found that the heavy petroleum-oils act as excellent lubricators, not being absorbed and being eliminated unchanged. In constipation he usually administered ordinary white vaselin with a little water or orange-juice, with excellent results. He had had much success with this treatment in disease, as well as in health; particularly in the severe constipation that often accompanies typhoid fever. He thought that it restricts bacterial growth, largely because it forms an oily coating over the contents of the entire digestive tract. He had also found that an antiseptic may be carried all the way through the digestive canal, when given in heavy petroleum-oils, such as vaselin. He had administered salol in this way, dissolving it in vaselin by means of heat; and, on testing the stools, has found that the salol had been carried through the digestive tract. He thought that at times this treatment had constituted a valuable means of controlling intestinal fermentation.

Dr. Hamill said that he had often found that to eliminate bread from the diet does much good, when the elimination of cereals does not. He thought it possible that the coincident elimination of the butter which is used on the bread may have contributed as much to the improvement as the exclusion of bread.

Dr. E. Rosenthal asked Dr. Freeman what can be done in regard to the use of sugar, when dealing with the class of persons that give children sugar with all forms of food.

Dr. W. G. Elmer considered it of some importance for physicians, when allowing persons to go away for several months, to plan the child's diet during this time, or to put the child under the care of another doctor. In several instances, there had come under his care children that had been allowed to continue for a number of weeks or months upon modified milk and bottle-feeding, which had become entirely inadequate for the child's growth and development; and the nutrition and general health of the child had suffered seriously in consequence. This was due to the fact that the mother had been sent away for a period of several months, with the advice that no change be made in the feeding of the child until her return.

Dr. Freeman, in closing, said that while he had put the 9 P.M. feeding on the list for the whole of the second year, he had not meant this to be an absolute regulation; as he thought that this feeding could often be eliminated during the early part of the second year with advantage, just as the 10 P.M. feeding may often be excluded with advantage in the third year.

As to pasteurizing, he did this regularly as long as the child takes as much as a quart of milk a day. When the child was on a reliable milk, he did this on account of fear of gastrointestinal infection, as well as on account of the possible danger of conveying infections, such as typhoid fever, scarlet fever, and diphtheria, through the milk. He agreed with Dr. Graham that it is often wise not to increase a child's diet at all during the summer, and that it is frequently better even to cut the diet down somewhat. As to the use of prunes and apple-sauce, he had found that they often cause disturbance of digestion; and he believes that they have no noteworthy nutritive value. Orange-juice is much more digestible and more reliable.

DR. FREEMAN agreed that too much fat is often given, and that this matter needs to be carefully watched. As to water, he had mentioned in his paper that this should be given between the feedings, and that the child should be allowed as much as he will take. The most common difficulty is to get children to take enough water, rather than the contrary. In regard to sugar, Dr. Freeman is accustomed to tell these parents that wish to use more sugar, that milk contains 4 or 5 per cent. of sugar, and that this amount is quite sufficient for any child. The danger is that if parents begin to use sugar, they will give too much; as children always want more. The safest and easiest way is to give none.

Dysentery Bacillus in Infantile Diarrhea.—Wollstein (*Journal of Med. Research,* August, 1903) finds that cases of infection by dysentery bacilli in infants tend to a clinical picture of dysentery with frequent mucous and bloody stools. In some cases of hospital infection following other diseases, especially pneumonia, and in other mild cases, the stools may not contain blood, but mucus is always present and in large amounts. The serum reaction is uncertain for one week, frequently positive after the sixth day, but may be absent for two weeks. It can not be relied on for early diagnosis in infants and young children. The only positive evidence during life is the isolation of the bacillus dysenteriæ, which is present in the stools for two or three weeks, but may remain longer. The type of organism almost invariably found in New York City is that of the Manila or Flexner bacillus.—*Journal American Medical Association.*

Current Literature.

PATHOLOGY.

Comby, J.: Tuberculosis in an Infant Forty Days Old. (*Arch. de Méd. des Enf.*, February, 1904, p. 98.)

After referring to another case he reported of tuberculosis of the lung and bronchial nodes in an infant fifty-six days old, the author records the present case. The baby's mother was twenty-seven years old and was in a hospital for advanced pulmonary tuberculosis. The infant had never been nursed, but was fed on diluted milk from birth, and had had some vomiting and diarrhea. It was not known just how long the infant had been in contact with the mother, but certainly less than one month. Ten days after coming under observation the child died, never having had any fever, but simply fading away.

The necropsy showed some emphysema at the anterior portions of the lungs, atelectasis of the costovertebral strips. In this region the lung was very dark, and dense like the spleen; section showed no pus, but blackish blood oozed out. No traces of pulmonary tuberculosis, but lesions suggesting the bronchopneumonia of hospitalized infants.

The tracheobronchial lymph nodes were very sligthly enlarged, one the size of a bean having a greyish surface and a softened interior. The abdominal organs were not found to have any tubercles. The author concludes that the case is one of very limited tuberculosis of the tracheobronchial nodes, due to maternal infection and not hereditary.

Marfan, Aviragnet and Detot: Subacute Hemorrhagic Meningitis with Hydrocephalus in the New-born. (*Annales de Méd. et Chir. Infant.*, February, 1904, p. 73.)

Two cases are reported in detail, one occurring in a male infant six and one-half months old, the other in a male infant twenty-four days old. The following statement is made in conclusion:—In the newly-born and in nurslings, there exists a subacute hemorrhagic meningitis, manifesting itself by tetanic muscular hypertonia and hydrocephalus. It is a nontubercular meningitis terminating fatally, either by a rapid and acute course or after passing into the ordinary chronic hydrocephalus.

MEDICINE.

Coulon, G.: Thyroid Tumor in a New-Born Infant. (*Arch. de Méd. des Enf.*, January, 1904, p. 36.)

Born three weeks before term, of syphilitic parents, who had both been under mercurial treatment, the infant was found to have an enlargement of the thyroid gland more perceptible on the right side. There was no trace of any syphilitic eruption. Under treatment with mercury alone the tumor, which had been considered a congenital goitre, disappeared entirely.

Combe, A.: Intestinal Autointoxication. (*Arch. de Méd. des Enf.* January and February, 1904, pp. 1 and 65.)

In a very interesting and well considered contribution the author gives a thoroughly scientific and up-to-date discussion of the existence, the diagnosis and the treatment of autointoxication from the intestine. A distinction is made between food poisonings and intestinal autointoxication, the latter being due to toxic substances produced within the intestine under the influence of the enzymes and bacteria ordinarily present.

Under etiology there are considered those causes which diminish the destruction, and those which increase the production of enterotoxins. Under diagnosis particular stress is laid upon the study of the urine, the presence of the ammonium salts of the fatty acids, of the aromatic oxyacids, of indol and skatol, and especially the presence of an increased amount of the ethereal sulphates being considered pathognomonic. Details for the various chemical tests are given and, finally, a study of the surface tension of the urine is said to be of value, a diminution of the surface tension running almost parallel with the intensity of the infectious diseases, and so being of prognostic value, while in intestinal autointoxication the curve of diminished surface tension is parallel with the curve of phenols and indols and so may serve to measure them.

Under treatment the author makes use of the same methods used in what he would call food poisoning, viz., modifying the culture medium in the intestinal canal, emptying the putrefactive products from the large intestine, combatting putrefaction in the intestine and favoring the elimination through other organs of the toxins already absorbed. The author thinks very highly of cereal gruels, considering that they have a marked power of inhibiting proteid decomposition, due perhaps to the slow formation of lactic acid as they pass along the intestinal tract. In support of this proposition the author gives the results of several other experimenters and also his own observations of cases in which the amount of indol in the urine was greatly reduced by giving, along with a meat diet, from 400 to 1,000 grams of farinaceous gruel. A series of general and special rules of diet is given.

For evacuating the colon lavage is recommended, and for diminishing putrefaction small doses of calomel followed by castor-oil.

Rowell, Hubert N.: Diabetes in Childhood. (*New York and Philadelphia Medical Journal,* May 7, 1904, p. 884.)

Two cases are reported, both in the same family. The amount of urine passed daily in the first patient, a boy of five years, reached 120 ounces, having a specific gravity of 1,030. The quantity of sugar varied from 4 to 6 per cent. The patient died after an illness of eight months.

The second case was a sister of the first patient; she had similar symptoms and died in coma after sixteen months' illness.

The family history was neurotic, and one aunt died of goitre and diabetes.

Labbé, Raoul and Demarque: Impetigo and Ecthyma with Diphtheria Bacilli. (*Rev. Mens. des Mal. de l'Enf.*, February, 1904, p. 49.)

Two cases are reported, one occurring in a boy of four years, the other, which terminated fatally, in a child of twenty-nine months. In the latter case death was due to a mixed pneumococcus and streptococcus bronchopneumonia. There was nothing in the skin lesions which was peculiar, save the slow course. Staphylococci as well as Löffler bacilli were obtained from the skin cultures, and the Löffler bacilli were found in the throat. The writers recommend topical application of diphtheria antitoxin as well as its injection.

Fraser, Henry: A Case of Hemiplegia, Occurring During Whooping-Cough and Diphtheria. (*British Medical Journal,* March 12, 1904, p. 597.)

In the course of whooping-cough complicated by diphtheria, an infant of eighteen months had a convulsion lasting some minutes, after which there was complete right hemiplegia, hemianopsia, and right hemianesthesia, except the foot and upper part of the face. There followed several convulsions at lengthening intervals, ceasing on the sixth day. One month after the onset the right leg showed returning power, the right arm could be moved voluntarily up to the elbow, but the child could not talk. Ten weeks after onset the child walked well, and the speech was better than before the illness. The writer naturally assumes that the lesion was a subdural hemorrhage.

Istomin, P. P.: Primary Non-Diphtheritic Croup. (*Medizinskoe Obosrenie,* Vol. lxi, No. 8, p. 544.)

The progress of medical knowledge exemplifies the law of rhythm in many details. From the inadequate conceptions of the prebacterial era we have seen the pendulum swing to an opposite extreme. The present time frequently shows the oscillations preparatory to a final mean.

Thus, for one instance, croup has been by many regarded as invariably diphtheritic in etiology. Now the evidence is fast accumulating in favor of the older opinion, and we must grant that croup is not infrequently independent of the Klebs-Löffler bacillus.

The author reviews the literature of this subject and reports a series of original observations which demonstrate the non-diphtheritic origin of many croup cases. In his eight patients repeated cultures failed to show diphtheria bacilli, while streptococci, diplococci, influenza bacilli and other germs were present. The membranous nature of the croup was proved in half the cases by laryngoscopic examination. Antitoxin was used, but of course ineffectually. Intubation became necessary in 3 cases, and 1 was tracheotomized but ended fatally.

The prognosis of non-diphtheritic primary croup appears to be even more serious than in diphtheritic croup, since we possess no antitoxin for these cases.

The author does not extend his conclusions to secondary non-diphtheritic croup, as seen in measles, influenza, etc.

Combe, A.: A Case of Inferior Benedikt's Syndrome. (*Rev. Mens. des Mal. de Enf.*, January, 1904, p. 1.)

At the time of the report the subject of this rare affection was four years old. The child suffered at the age of sixteen months from a serious attack of influenza which took the gastroenteric form. About two weeks afterward there was some paralysis of the upper lid of the left eye. The intestinal symptoms disappeared, but the ptosis continued and in another month there was left external strabismus and partial paralysis of the right arm; within another three months there was complete spasmodic paralysis of the right half of the body, the infant being unable to stand, and unable to use the right arm. Along with the paralysis of the right side there developed choreiform movements and later there was a slow recovery of voluntary power on the paralyzed side. The child was under observation at intervals for nearly three years after the onset of the malady, and careful examinations are recorded of the condition of the cranial nerves, especially the third, fourth and sixth. At the time of the report there was still some paralysis of the left oculomotor and right hemiparesis involving the face, arm and leg; the rhythmic trembling or choreic movements were still present in the paretic side. There was no loss of sensation.

The condition was thought to be due to a subacute hemorrhagic poliomesencephalitis of infectious (influenza) nature. The lesions were thought to be on the left side of the pons in the region of the oculomotor and pathetic nerve nuclei and also of the pyramidal tract.

Auché, M. B.: A Contribution to the Study of the Pneumococcus Cerebrospinal Meningitis of Infancy. (*Rev. Mens. des Mal. de l'Enf.*, January, 1904, p. 20.)

The writer regards pneumococcus meningitis as much more serious than that in which the diplomeningococcus is found. The case reported was one of slow evolution in a boy of five years complicating a measles bronchopneumonia. There was repeated vomiting at the onset, intense headache, but no hydrocephalic cry, moderate constipation, photophobia with dilatation of the pupils, stiffness of the neck and spine, Kernig's sign, slight exaggeration of the reflexes, slight irregularity of the pulse, retraction of the belly and *tâche cérébrale;* no delirium, no convulsions, no paralysis. Spinal punctures made three times withdrew a slightly cloudy liquid in which formed a fibrinous coagulum; polynuclear leukocytes predominated; cultures gave rise to a diplococcus which corresponded to the pneumococcus of Fraenkel, and which had a very slight virulence. The child recovered completely at the end of six weeks, the treatment being warm baths and spinal puncture.

Gordon, Alfred: Juvenile Tabes. (*New York and Philadelphia Medical Journal,* May 7, 1904, p. 872.)

The author calls attention to the fact that progressive muscular atrophy and amyotrophic lateral sclerosis are the only affections described in the literature as complications or sequelæ of an old anterior poliomyelitis. His case of tabes occurred in a girl who at the onset of symptoms was fourteen years old, but who had had from the age of eighteen months a total paralysis of the right arm. This paralysis had come on after an attack of vomiting, convulsions and fever which lasted three days. At the time of reporting the case the girl was seventeen years old. Three years previously she began to have weakness and paresthesia in the left leg, numbness of the thigh and leg and the feeling of walking on cotton. Next there was pain in the whole left limb, generally a slight ache, but sometimes sharp and lancinating. A year later the right leg became weak and ached, and there was urgency of micturition. Physical examination showed the muscles of right upper limb, including the scapula to be markedly atrophied and completely paralyzed, except some small muscles of the hand which had partly recovered. The bones including the scapula were very small and thin. Sensations were diminished but not abolished. The reflexes of the arm, forearm and scapula were absent, and there was no response of the arm muscles to electricity, only a slight response to strong currents by the muscles of the forearm and scapula, reaction of degeneration being present.

The right lower extremity was apparently normal, but the left thigh was 15 cm. smaller, with its anterointernal aspect wasted and its tissues flabby. There was diminished response by the muscles of left thigh to faradism and galvinism, but no R. D. The muscles of the legs responded equally on both sides. Standing was normal, no Romberg's sign, but better on the right foot than on the left. Resistance power stronger on the right; knee jerk elicited with difficulty on the right, absent on the left. Objective sensations of all kinds diminished on the left; numbness of the soles pronounced on the left, slight on the right. Numbness, weakness and aching more pronounced in the left leg; slight irregularity of the pupils and disturbance of micturition.

The writer concludes that the case is one of tabes at an early stage developed in a patient showing signs of an acute anterior poliomyelitis in infancy. The case was regarded as due to hereditary syphilis.

HYGIENE AND THERAPEUTICS.

Carbonell y Soles, F.: Creosote in the Chronic Intestinal Catarrhs of Infancy. (*Archiv. de Gine. Obstetr. y Pediatr.*, Vol. xvi., No. 18, p. 402.)

The author, while recognizing that the diet is the most important element in the treatment of intestinal affections in infants, recommends the use of derivatives of creosote with or without cod-liver oil as important helps in the management of these conditions. It must be remembered that creosote does not have any direct effect upon the bacillus of tuberculosis, but that its use in this disease is efficient as the result of the artificial arthritism which it produces (Bernheim). It acts as a stimulant of assimilation rather than as an antiseptic or specific. This is just what is necessary in the intestinal affections of children. Creosote, figuratively speaking, "embalms" the food which has entered the intestine, and prevents fermentation. It acts as an antiseptic, corrects the catarrhal inflammation of the mucosa, promotes nutrition, and thus induces increase in weight. The best preparation is guaiacol or creosote tannate. The author has used this treatment in over 100 cases. The tannate of creosote in doses of from 1 to 5 cgm. daily, according to age, with a mixture of pepsin, or with sodium glycerophosphate, in syrup and water, were the forms of medication used. The only contraindication was a pre-existing disease of the kidneys. In athrepsia and in rickets, the emulsion of cod-liver oil with guaiacol, and sometimes with calcium lactophosphate or hypophosphite, was found of great value.

Morse, John Lovett: A Study of the Caloric Needs of Premature Infants. (*American Journal of the Medical Sciences*, March, 1904, p. 463.)

After discussing the results of observations by Camerer, Heubner, Czerny and Keller and others, the writer gives the histories of six premature infants fed artificially on Walker-Gordon modified milk, together with their weight charts and the number of calories per kilo in the food taken daily. From the fifteenth to the ninetieth day the average amount of food taken was 122.7 calories per kilo of body weight; and from the ninetieth to the hundred and twenty-fifth day 142.9 calories per kilo. In conclusion, the caloric need of premature infants is relatively greater than that of full term infants. This greater need is due in part to the small size and comparatively large surface area for heat radiation, and partly to inability of their feeble digestive organs to utilize the full caloric value of the food ingested. This conclusion emphasizes the importance of protecting premature infants against loss of heat, and of providing a food which is very easily digested.

Armstrong, Hubert: A Note on the Comparative Mortality of Breast-Fed and Hand-Reared Infants. (*The British Journal of Children's Diseases*, March, 1904, p. 115.)

At the Liverpool Infirmary for Children investigation was made of 1,000 children, classified as to their mode of feeding as follows:—

(1) Wholly breast-fed up to six months or over; of these there were 689.

(2) Breast-fed to the same age, with the addition of other "foods," cow's milk, biscuits, etc., 127.

(3) Entirely hand-reared from birth or shortly after, 184.

Exclusive of deaths within the day of birth there were the following numbers of deaths in each class:—

(*a*) During the first year:—	(*b*) During the second year:—
Class 1. 58 or 84.14 per 1000	25 or 39.62 per 1000
" 2. 17 " 133.86 " 1000	4 " 36.36 " 1000
" 3. 42 " 228.26 " 1000	14 " 98.58 " 1000

D'Haeluin, Maurice: The Revivification of an Infant's Heart Thirty-six Hours after Death. (*Gazette Méd. de Belge*, January 21, 1904, p. 163.)

An interesting report is given of this incident, where rythmic contraction of the right and left auricle were produced by the artificial circulation of the serum of Locke. The contractions were successfully obtained at intervals of seven, fourteen, thirty and thirty-six hours after death and in spite of the cadaveric rigidity of the organ.

Bronstein, T. S.: Cryoscopy of Milk and Its Practical Significance. (*Russki Vratch.*, Vol. iii., No. 3, p. 90.)

The author's researches with milk have convinced him that the cryoscopic point of this fluid is constant. The cryoscopic method allows a rapid and easy estimate of dilution of the milk to be made. Combined with the test for fat, this method reveals two of the most common adulterations, namely, the addition of water and the removal of the cream.

In view of this, the author urges that in addition to other requirements it be demanded that the lowering of the freezing-point of milk should not pass the limits given by 0.55°-0.57° C.

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Original Communications.

AN ANALYSIS OF ONE HUNDRED AND EIGHTEEN CASES OF LOBAR PNEUMONIA IN INFANCY.*

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This study was undertaken because of my feeling that many of the commonly accepted views, not only as to the frequency of lobar pneumonia in infancy, but also as to its onset, course and prognosis, were erroneous and not justified by the facts.

During the last nine years about 1,900 cases, both medical and surgical, were admitted to the wards of the Infants' Hospital. One hundred and eighteen of these had lobar pneumonia. Fifty occurred in the first year of life and sixty-eight in the second year. There can be no doubt, I think, as to the accuracy of the diagnosis in these cases, as they were all in charge of and examined by Dr. Rotch, Dr. Wentworth or by me. In a number the correctness of the diagnosis was proved by autopsy. These figures certainly seem to show that lobar pneumonia is not very uncommon in infancy. Only 60 cases of bronchopneumonia, or just half as many as of lobar pneumonia, were admitted to the hospital during the same period. It is probable, however, that this proportion does not represent the real relative frequency of lobar pneumonia and bronchopneumonia in infancy, as only the more severe cases of bronchopneumonia are brought for admission, and those secondary to the two most common causes of bronchopneumonia in infancy, measles and whooping-cough, are, of course, rejected. It does show, however, that lobar pneumonia must be relatively more common in comparison with bronchopneumonia in infancy than is generally supposed.

ONSET AND HISTORY.—The history of the onset and course of these cases before their admission to the hospital was in many cases wanting or very defective. In 77, however, the history was fairly complete. Vomiting was mentioned as the initial symptom in 7 cases and a convulsion in one. A chill was not mentioned in any case. While vomiting might easily have escaped mention, it is very improbable that a convulsion would not have been noted, and it seems safe to assume that a convulsion was the earliest symptom in but 1 case. These figures show, therefore, that the onset of pneumonia in infancy is less stormy than is usually supposed, and that a convulsion is very seldom the initial symptom. The sudden onset of high fever was rarely noted, but fever was almost invariably mentioned in the history. Drowsiness and apathy were also very frequently mentioned. There was a positive history of cough in 75 of the 77 cases in which there were definite data, its absence being noted in only two. These cases seem to show, therefore, that the onset of lobar pneumonia in infancy is usually not accompanied by very acute symptoms, but that fever and cough are usually first noted, these symptoms often being accompanied by drowsiness or apathy.

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* Read before the Sixteenth Annual Meeting of the American Pediatric Society Detroit, Mich., May 31, 1904.

PHYSICAL SIGNS.—Movement of the alæ nasi was noted in 56 cases, its absence in 14. No reference is made to it in the others. It is possible that it was present in these cases also, although not mentioned. My impression, however, from seeing the cases from day to day is that motion of the alæ nasi is by no means a constant symptom of lobar pneumonia in infancy.

Cyanosis was noted as being present in 17 and absent in 53 cases. It is very possible, however, that it may have been present at other times in the course of the disease and not noted. Pallor was noted very often. A condition of somnolence or apathy was mentioned very frequently.

The following table shows which lobes were involved and whether they were involved wholly or in part.

One Lobe.	Whole	Part	Total	Per Cent.
Right Upper Lobe - -	16	4	20	17
Right Middle Lobe - -	0	1	1	1
Right Lower Lobe - -	7	12	19	16
Left Upper Lobe - -	14	2	16	14
Left Lower Lobe - -	24	21	45	38
	—	—	—	—
	61=60%	40=40%	101 =	86%

More than One Lobe.

Right Upper and Right Lower Lobes	7
Right Upper and Right Middle Lobes	1
Right Upper, Middle and Lower Lobes	2
Right Lower and Left Lower Lobes	5
Left Upper and Left Lower Lobes	2
	17=14%

That is, a single lobe was involved in 86 per cent. of the cases and more than one lobe in 14 per cent. The whole lobe was involved in 60 per cent. and a part of the lobe in 40 per cent. of the cases in which the process was limited to a single lobe. The upper lobes were much more often entirely involved than the lower. The relative frequency with which the lobes were involved was as follows:—left lower lobe; right upper lobe; right lower lobe; left upper lobe; right middle lobe. The left lower lobe was involved in more than twice as many cases, however, as any other lobe. In the cases in which more than one lobe was involved, they were involved together or in succession in about equal number.

FEVER.—*Duration.*—The duration of the fever in the 61 cases in which it could be determined varied from 4 to 18 days. The following table gives the number of cases for each number of days:

	First Year.	Second Year.	Total.
4 days	1	3	4
5 "	4	4	8
6 "	3	3	6
7 "	3	11	14
8 "	2	5	7
9 "	4	4	8
10 "	0	4	4
11 "	1	1	2
12 "	0	2	2
14 "	1	2	3
15 "	1	1	2
18 "	0	1	1
	20	41	61

It shows, as would be expected, that 7 days was the most common duration. About half as many lasted 5, 6, 8 or 9 days. A somewhat larger proportion of the cases in the first year were of shorter duration than of those in the second. The average duration of the fever was 8.1 days. It was 7.7 days in the 20 cases in the first year, and 8.2 days in the 41 cases in the second year, being nearly the same for the two years.

Height.—The highest temperature was 107°F., in a fatal case. The following table shows the highest point of the fever for the two years and for each year separately:

	First Year.	Second Year.	Total.
Highest Temperature.	No. and Per Cent. of Cases.	No. and Per Cent. of Cases.	No. and Per Cent. of Cases.
Over 106°F.	1= 2%	5= 7%	6= 5%
105° - 106°	16=33%	25=38%	41=36%
104° - 105°	14=29%	13=20%	27=24%
103° - 104°	12=25%	16=24%	28=24%
103° or Less	5=11%	7=11%	12=11%
	—	—	—
	48	66	114

It is evident from this table that in the vast majority of the cases (84 per cent.) the highest temperature reached was between 103°F. and 106°F. The highest temperatures within these limits were about equally divided among the degrees and were approximately the same for the two years. In 11 per cent. the temperature did not rise above 103°F., and in 5 per cent. it was over 106°F. The proportion of excessive temperatures, that is, over 106°F., was rather larger in the older infants.

Termination.—The temperature fell by crisis in 64 cases and by lysis in 29 cases, giving a percentage of crises of 68.8. The percentage of crises in the first year was 54, and in the second year 77.5, figures consistent with the general opinion that crisis is less common in the first year than in later life. Collapse during the crisis was noted but once in these 64 cases, although it is possible that it may have occurred in other cases and not have been mentioned in the notes. Granting that it escaped attention in a few cases, the frequency of collapse during the crisis is even then much less than would be expected from the general teaching on the subject. A pseudo-crisis was noted in 9 cases. It occurred the day before the crisis in 6 cases, two days before in 1 case and three days before in 2 cases. Pseudo-crises were equally common in both years.

Irregularity.—The temperature was notably irregular in 7 cases. In three others there were remissions of from two to three degrees, and in 11, remissions of from three to five degrees.

These irregularities and remissions of temperature were equally common at all ages.

PULSE.—The following table shows the highest pulse rates and the mortality for each rate, both in the first and second years and in the two years combined. It will be seen from this table that the usual pulse rate was between 150 and 170, 51.2 per cent. of the cases belonging in this class. In 75.8 per cent. the pulse rate was over 150 and in 6.7 per cent. over 180. In 14.3 per cent. it was below 140 and in 23.7 per cent. below 150. No case died in which the pulse was not over 140. The pulse rate, when over 140, seemed to have little or no influence on the mortality. A rapid pulse was no more fatal in the second year than in the first year, except when it was over 180. The case with the most rapid pulse recovered, however.

Pulse Rate.	First Year.		Second Year.		Totals.	
	Number and Per Cent. of Cases.	Number of Deaths and Per Cent. of Mortality.	Number and Per Cent. of Cases.	Number of Deaths and Per Cent. of Mortality.	Number and Per Cent. of Cases.	Number of Deaths and Per Cent. of Mortality.
110–120			1= 1.5 %		1= .8 %	
120–130	1= 2 %		1= 1.5 "		2= 1.6 "	
130–140	6=12 "		8=11.9 "		14=11.9 "	
140–150	8=16 "	5=63 %	3= 4.4 "		11= 9.4 "	5=45.4 %
150–160	13=26 "	5=38 "	24=35.8 "	4=16.6 %	37=31.6 "	9=24.3 "
160–170	10=20 "	4=40 "	13=19.4 "	1= 7.6 "	23=19.6 "	5=21.7 "
170–180	9=18 "	4=44 "	12=17.9 "	5=41.6 "	21=17.9 "	9=42.8 "
180–190	3= 6 "		4= 5.9 "	2=50 "	7= 5.9 "	2=28.5 "
190–200			1= 1.5 "		1= .8 "	
	50	18	67	12	117	30

RESPIRATION.—The following table gives the respiratory rate and the percentage of mortality for each rate during the first and second years and for the two years combined. It shows that in 75 per cent. of the cases the respiratory rate was between 55 and 80, while in 11 per cent. it was below 55, and in 14 per cent. above 80. No case died in which the rate of the respiration was below 55. The rate of the respiration above 55 had no apparent effect on the mortality. It is to be noted, moreover, that 3 of the 5 cases in which the respiration was over 90, recovered. There was no evident relation between the rate of the respiration and the age, nor did the relation of the respiratory rate to the age seem to have any effect on the mortality.

Rate of Respiration.	First Year.		Second Year.		Totals.	
	Number and Per Cent. of Cases.	Number of Deaths and Per Cent. of Mortality.	Number and Per Cent. of Cases.	Number of Deaths and Per Cent. of Mortality.	Number and Per Cent. of Cases.	Number of Deaths and Per Cent. of Mortality.
35–40	1= 2 %		2= 3 %		3= 2.5 %	
40–45	1= 2 "		1= 1.5 "		2= 1.7 "	
45–50	1= 2 "		2= 3 "		3= 2.5 "	
50–55	3= 6 "		2= 3 "		5= 4.2 "	
55–60	10=20 "	5=50 %	14=20.9 "	2=14.2 %	24=21.3 "	7=29 %
60-65	4= 8 "	2=50 "	2= 3 "		6= 5.1 "	2=33 "
65–70	12=24 "	5=41.6 "	19=28.3 "	3=15.7 "	31=26.5 "	8=26 "
70–75	6=12 "	1=16 6 "	2= 3 "	2=100 "	8= 6.9 "	3=37 "
75–80	6=12 "	1=16.6 "	13=19.3 "	1= 7.9 "	19=16.2 "	2=10 "
80–85	4= 8 "	3=75 "	1= 1.5 "	1=100 "	5= 4.2 "	4=80 "
85–90			6= 9 "	2=33.3 "	6= 5 1 "	2=33 "
90–95	2= 4 "	1=50 "			2= 1.7 "	1=50 "
95–100			3= 4.5 "	1=33.3 "	3= 2.5 "	1=33 "
	50	18	67	12	117	30

MORTALITY.—Thirty-one cases died, giving a mortality of 26.3 per cent. Eighteen of these cases were in the first year, giving a mortality of 36 per cent., and 13 in the second year, giving a mortality of 19 per cent.; that is, the disease was nearly twice as fatal in the first as in the second year. Excluding the 4 cases in which death occurred late as the result of empyema, the mortality was 22.8 per cent. for the two years and 31.9 per cent. and 17.9 per cent. for the first and second years respectively. These figures give a very different picture of the severity of pneumonia in early life from that given in most text-books. They show that, although pneumonia may be a comparatively mild disease in childhood, it is a severe and very fatal disease in infancy, the fatality varying inversely with the age of the infant. The duration of the fever in the 15 uncomplicated fatal cases in which it could be determined was 5, 7, 7, 9, 9, 10, 10, 11, 12, 12, 15, 15, 20, 22 and 28 days, giving an average of 12.8 days. (Average in cases which recovered, 8.1 days.)

In 23 of the fatal cases the pneumonia was uncomplicated. In the majority there was little or no resolution of the lung. Empyema was the cause of death in 4 cases, acute nephritis in 1, meningitis in 1, cardiac failure in 1 and thrombosis of the longitudinal sinus, with red softening of the brain, in another.

The following table shows which lobes were involved in the fatal cases and whether they were involved in whole or in part. The percentages in parenthesis are the corresponding ones for the whole number of cases.

One Lobe.	Whole	Part	Total	Per Cent.
Right Upper Lobe	6		6	26 (17%)
Right Lower Lobe	1		1	4 (16%)
Left Lower Lobe	7	4	11	48 (38%)
	14=61% (52%)	4=17% (34%)	18=78%	(86%)

More than One Lobe.

Right Upper and Right Lower Lobes	2
Three Right Lobes	1
Left Upper and Left Lower Lobes	2
	5=22% (14%)

This table shows that several lobes or the whole of a single lobe were somewhat more often involved in the fatal than in the combined fatal and non-fatal cases. This seems to justify to a certain extent the conclusion that the mortality varied directly with the amount of lung involved. The relative frequency with which the lobes were involved in the fatal cases was the same as in the combined cases, suggesting that there was no relation between the portion of the lung involved and the mortality.

The following table shows the total number of cases and the number of deaths for each degree of fever in the uncomplicated cases as well as the percentage of mortality for each degree both for the two years and for each year separately.

Highest Temperature.	First Year.		Second Year.		Totals.	
	Number of Cases.	Number of Fatal Cases and Per Cent. of Mortality.	Number of Cases.	Number of Fatal Cases and Per Cent. of Mortality.	Number of Cases.	Number of Fatal Cases and Per Cent. of Mortality.
Over 106°F.	1	1—100 %	5	1—20 %	6	2—33 %
105°F.–106°F.	16	5— 31 "	25	4—16 "	41	9—22 "
104°F.–105°F.	14	2— 14 "	13	1— 8 "	27	3—11 "
103°F.–104°F.	12	5— 42 "	16	2—13 "	28	7—25 "
103°F. or less.	5	1— 20 "	7	0—— "	12	1— 8 "
	48		66		114	22

This table shows that the mortality was lowest in the cases in which the temperature did not rise above 103°F., and highest in those in which it went over 106°F. The figures between these points are somewhat confusing. They seem to prove that a temperature between 104°F. and 105°F. was less serious than one between 103°F. and 104°F., or one between 105°F. and 106°F., both of which showed about the same mortality. This hardly seems reasonable, however, and it is probably safe to assume that variations in temperature between 103°F. and 106°F. had little effect on the mortality. A high temperature was apparently no more or no less fatal in the first than in the second year, the mortality in the younger infants being approximately twice as great for all temperatures in which there were cases enough to make comparisons of value.

The rates of the pulse and respiration in the fatal cases as well as the percentage of mortality for each rate, both for the two years combined and for each year separately, have already been shown in previous tables. As already noted, no case died in which the pulse was not over 140 or the respiration over 55. Differences in the pulse rate above 140, or in the respiratory rate above 55, had no apparent influence on the percentage of mortality, nor did there seem to be any definite relation between the rate of the pulse and respiration, the age and the percentage of mortality.

COMPLICATIONS.—*Empyema.*—There were 9 cases of empyema, giving a percentage of 7.6. Four of these occurred in the first year and five in the second, giving a percentage of 8 in the first and of 7.3 in the second year. While the percentage of cases of empyema was nearly the same in both years, empyema was far more fatal in the first than in the second year, 3 of the cases in the first year dying, and only one of those in the second, giving a mortality of 75 per cent. and 20 per cent. respectively. It was impossible to determine from the records when pus was first formed. The temperature, however, should be a fairly accurate guide. It did not fall in 4 cases, while it rose again the day after the crisis in 3 and three days after the crisis in 2.

Serous pleurisy occurred in 1 case, which was tapped. The fluid did not reaccumulate.

Otitis Media.—Otitis media occurred in 21 cases, giving a percentage of 17.8. It occurred equally frequently in both years. Both ears were involved in 14 cases, and one ear only in 7 cases. The process was catarrhal in 2 cases, and purulent in 19.

Cerebral Complications.—Thrombosis of the longitudinal sinus with extensive red softening of the brain occurred in 1 case. A pneumococcus meningitis, proved by lumbar puncture, developed in 1 case, which died. In 3 other cases there were marked symptoms of meningeal irritation. In one, death occurred in 12 hours. No lumbar puncture was made. In another in which there were local spasms and paralyses, followed by coma and death, two lumbar punctures gave negative results. In a third fatal case there was a severe terminal delirium lasting several days, the infant acting "as if insane."

Acute nephritis was the cause of death in 1 case. It developed early in the course of the disease and did not prove fatal until some days after the crisis.

Jaundice.—There was marked jaundice, accompanied by bile in the urine, in 1 case. The stools, however, were green.

TREATMENT.—No treatment beyond nursing and the regulation of diet was given in 30, or 25 per cent. of the cases. Antipneumococcic serum was used in 10 cases with no effect whatever on the course of the disease. Creosotal was used in 6 cases, also with no effect. Brandy was given in 70, or 60 per cent. of the cases, and strychnia in 30, or 25 per cent. of the cases. Aromatic spirits of ammonia was given in 12 cases, digitalis and caffein, each in 1 case. Phenacetin, in doses of ¾ grain to 2 grains, was used in 8 cases, and lactophenin in 2 grain doses in 1 case. The temperature was, as a rule, but little effected by these drugs. They apparently did no harm.

Cold in various forms was used in 28 cases, or 24 per cent. Tub baths, at temperatures varying from 80°F. to 100°F., were used in 8 cases. They were, as a rule, badly borne and in 2 cases caused serious collapse. They were, as a rule, not effectual. Sponge baths at from 80°F. to 90°F., or of equal parts of alcohol and water at 100°F., were used in 5 cases. They were usually resisted and fatigued the infants without giving any good results. Fan baths, at a temperature of from 100°F. to 110°F., were used in 14 cases. They were badly borne in 1 case, were disliked by another and caused excitement in a third. Several of the infants seemed to enjoy them, and, with the exceptions noted, they were always well borne. In most cases they caused drops in the temperature of from one to three or even more degrees. The cold pack was used in but 1 case, in which it gave very good results.

Cotton jackets and poultices were never used and no applications were made to the chest.

Summary.—Lobar pneumonia is more common and occurs relatively more frequently in comparison with bronchopneumonia in infancy than is generally supposed. The analysis of these cases shows the following points:—The onset was less stormy than is generally thought. It was often ushered in by vomiting, but rarely by a convulsion. It usually began with fever and cough, which were often accompanied by apathy or drowsiness. Movement of the alæ nasi was not a constant symptom. A whole lobe was more often involved than a part. The left lower lobe was the one most commonly involved. The right upper lobe and right lower lobe came next in frequency. The portion of the lungs involved was relatively the same in the fatal cases as in those which recovered. As a rule, the area involved was larger in the fatal cases. The average duration of the fever in the cases that recovered was about eight days, being nearly the same in both years. The course was more often short in the first year, however, than in the second. The average duration of the fever in the uncomplicated fatal cases was 12.8 days; that is, the duration of the fever was longer in the fatal cases than in those that recovered. The highest temperature was usually between 103°F. and 106°F., the number of cases being nearly the same for each degree. The temperature fell by crisis in 68.8 per cent. Crises were less common in the first than in the second year. Collapse during the crisis was very unusual. Pseudo-crises were not very common, but irregularities and remissions in the temperature were not at all unusual. The mortality was lowest when the temperature did not rise above 103°F., and highest in those cases in which it went over 106°F. The degree of fever between 103°F. and 106°F. had no apparent effect on the mortality. A high temperature was no more fatal in the second year than in the first year. The usual pulse rate was between 150 and 170. No case died in which the pulse was not over 140. The rate of the pulse, when it was above 140, had little or no apparent influence on the mortality. The usual respiratory rate was between 55 and 80. No case died in which the respiration was below 55. The rate of the respiration, when above 55, had no apparent effect on the mortality. The mortality, excluding the cases in which death was due to empyema, was nearly 23 per cent. It was almost twice as great in the first as in the second year, being 32 per cent. and 18 per cent. respectively. Otitis media was the most common complication, occurring in 18 per cent. Empyema was the next most frequent, occurring in about 8 per cent.

PROGNOSIS.—The following statements regarding prognosis seem justified. The prognosis of lobar pneumonia in infancy varies decidedly with the age of the infant and to a certain extent with the amount of lung involved. The prognosis is good when the temperature is not over 103°F. It is serious when it is above 106°F. Variations between these points make little or no difference in the prognosis. The prognosis is good when the pulse is not over 140 or the respiration over 55. The amount of the increase above these limits is of little importance.

DISCUSSION.

DR. KERLEY.—I should like to ask Dr. Morse if the respiration and pulse were taken when the child was asleep or when awake. During the past year the internes at the Infants' Asylum have made observations of interest and it was surprising how widely the respirations and pulse varied in perfectly normal children, the respirations being, of course, much slower when the child was asleep. More valuable information was obtained when these were taken while the child slept.

DR. ABT.—I would ask if any of the cases showed pronounced meningeal symptoms. We are led, from the literature, to believe that pneumonia with meningeal symptoms is relatively common.

DR. CHURCHILL.—The paper confirms my belief that lobar pneumonia is more common in children than has been supposed. I do not believe the cases are looked for carefully enough, or more would be discovered. I was much interested in a case of lobar pneumonia seen lately in a child of twelve months. The child was taken ill with pneumonia in February, there being only a small patch over the left lobe. Cultures from the throat revealed the presence of the pneumococcus and the smear showed influenza bacilli. The pneumonia subsided in thirty-six hours. Six weeks later the child was again taken ill with lobar pneumonia in exactly the same spot, ran a ten or twelve days' course and the child died. The culture showed the presence of the pneumococcus and no influenza bacillus was found. It was of interest that with a combined infection the affection was trivial; but when the pneumococcus infection existed alone it killed the child. The combination of pneumococcus and influenza infection in adults is almost invariably fatal. I do not understand whether or not pericarditis complicated the pneumonia in Dr. Morse's cases. I have seen 2 such cases; in one there were no permanent after-effects; in the other a bad chronic endocarditis was left in its wake. In private practice the prognosis is much better than in hospital practice. I believe the giving of depressing antipyretics is more dangerous in infants than in adults. Sponge-baths are better borne than tubbing in children.

DR. HOLT.—The figures given by Dr. Morse are practically identical with my own statistics. The great frequency of involvement of the left lower lobe is still unexplained.

Regarding prognosis, it seems that pneumonia involving but a single lobe is seldom fatal, no matter how high the temperature might go, or how rapid the respiration might be, provided the child is in fair condition previous to the onset of the disease. Too much importance has been attached to the rapidity of the pulse. Certainly in a large proportion of the cases the pulse rate is over 150. It is the quality and not the frequency of the pulse which is the important factor. Cases may recover with an exceedingly high temperature even when it is let alone. I recall 1 case in which there was a temperature of 107.2°F., and yet the patient recovered. The antipyretic treatment of lobar pneumonia is a failure. It is a mistake to consider the temperature too much in treatment. Children, as a rule, bear antipyretic measures rather badly. I recall the instance of a boy, three and a half years old, with lobar pneumonia, whose father was a firm believer in antipyretic measures. When about to apply the cold sponging, the boy cried, "Papa, if you will let me alone I will never do it again."

The element of rest in the treatment of lobar pneumonia in children is very important. The ice-bag to the head is useful, especially for the nervous symptoms, which, when severe, call for the cold pack or even the bath.

The mortality differs in hospital and in private practice. Statistics collected some years ago gave a mortality considerably less than that given by Dr. Morse. I think it is a mistake to allow the opinion to go forth that the general mortality of lobar pneumonia is as high as has been given by Dr. Morse. With such a view, the inference would be drawn that the adoption of some particular plan of treatment is followed by remarkable success. If the text-books give a mortality of 30 per cent. for the first year, and the physician who treats all cases by large doses of iodid of potassium, sees results much better than this, it is not unnatural that he should claim that it is a specific for the disease. I do not believe the mortality from lobar pneumonia in children, taking all ages together, is over 10 per cent. in private practice.

DR. ADAMS.—I have been struck by the high mortality figures given by Dr. Morse since they do not accord with those in my own personal experience. My mortality was certainly not so high as given in the paper. Dr. Holt's figures of 10 per cent. would more nearly express my own.

I am glad that Dr. Holt called attention to the fact that the thermometer is not such a great and important aid in the treatment of lobar pneumonia in children. The tendency is to regard high temperature as a menace of evil. I have frequently seen temperatures of 105°F. and 106°F. in children, without the slightest manifestations of nervous phenomena. I presume the temperatures given by Dr. Morse were taken per rectum.

Still, one is struck by the average low temperatures; the majority of the children did not run a temperature over 104°F. Certain children would bear a temperature of 104 or 105.5°F. without any manifestations of seriousness. I have long since abandoned the use of the bath except in extreme cases. One patient of mine had a temperature of 108.6°F.; clearing out the bowels and placing the child in the bath reduced the fever in two hours' time to 104°F.; but the left lung was solid from base to apex and the child was in a moribund state and died.

DR. NORTHRUP.—I prophesy that in two years a new element will be mentioned in the treatment of lobar pneumonia and that will be, *cool, fresh air,* which will be used as a heart stimulant and as an antipyretic and which will remove all nervous and cerebral symptoms.

DR. MORSE.—The pulse and respiration were taken when the infants were quiet, and if possible when asleep. I agree that the findings could not be relied upon unless the infants were quiet or sleeping. The point I wish to bring out in my paper is that there is no cause for alarm if the pulse and respiration are rapid.

With regard to the meningeal symptoms, there is no further history of these given than is recorded in the paper. Less careful observers would probably have thought that some of these infants had meningitis. Some of the cases had been sent in with the diagnosis of some abdominal lesion.

I did not enter into a discussion of the various plans of treatment, but have given only a summary of the treatment which had been followed in the hospital. I believe that it is very important to leave the patients alone as much as possible. They should have the greatest possible amount of fresh air, be properly fed and have the bowels kept open. If marked nervous symptoms develop as result of the high temperature, the temperature should be treated, otherwise, not. The most important part of the treatment is an abundance of fresh air. Personally, I have never given coal-tar antipyretics in pneumonia. My experience has led me to believe that infants do not bear tub-baths or sponge-baths as well as fan-baths. I feel that the prognosis in private practice is different from that in hospital practice. I do feel, however, that pneumonia in infancy is a much more serious disease than is usually supposed. Pneumonia in infancy is a very different disease from pneumonia in childhood. My experience with practitioners in general is that they think that babies with pneumonia almost always get well. I hope to make them realize by this paper that they do not always do so.

ACUTE MYOCARDIAL INSUFFICIENCY IN SOME INFECTIONS IN CHILDREN.*

BY F. FORCHHEIMER, M.D.,
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The term, chronic myocardial insufficiency, was introduced by Ebstein, as applying to all those conditions in which the normal relation between pulmonic and systemic circulation is disturbed on account of some anatomical change in the myocardium. In acute myocardial insufficiency the same definition holds good, except in that the process is an acute one. The importance of our subject lies in the fact that a large number of these acute myocardial insufficiencies develop in connection with the infections in childhood; scarlatina, diphtheria, rheumatic fever, septicemia, typhoid fever and pneumonia. Beyond the possibility of a fatal termination from the acute myocardial condition, there remains another which is very far-reaching for the future of the individual who survives. In the greatest number of cases of heart weakness developing during pubescence and young adult life, the only explanation that has presented itself is heart strain, either due to development or inherent, *i.e.*, congenital, myocardial weakness. In some of the diseases mentioned before, especially diphtheria, scarlatina, typhoid fever, the myocardial changes, especially the interstitial ones, are so well marked that permanent danger is done to the heart which may only manifest itself when an extraordinary call upon the functional activity of the heart is made. The view which is daily gaining more ground, that socalled idiopathic dilatations of the heart are not so common as was supposed, therefore, is probably true; the basis for a dilatation being some myocardial change. As it is a fact accepted on all hands, that, in every case of peri- or endocarditis, the myocardium is more or less involved, it will be seen how great the number of cases becomes in which it is possible that acute myocardial insufficiency may develop. In pericarditis with effusion the additional element may be the possble failure in diastole; in endocarditis, the chance that a damaged myocardium may not be able to perform compensation for a valvular lesion. Furthermore, in acute nephritis of scarlatina, the increased resistance in the left heart will be less readily overcome by a damaged than a healthy myocardium. But the development of symptoms of acute myocardial insufficiency depends upon the amount of damage done to the myocardium, so that in a number of cases no symptoms develop at all; in a much larger number the symptoms develop after the febrile course of the primary disease has ceased, being due to a continuance of the process and its bad results; in these cases the development of symptoms may be postponed indefinitely; in a certain number of cases the changes in the myocardium are so great that they manifest themselves early during the febrile period.

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* Read before the Sixteenth Annual Meeting of the American Pediatric Society, Detroit, Mich., May 31, 1904.

Of the frequency of myocardial changes in connection with infectious diseases there is no doubt since the adoption of Krehl's method for examining the heart. E. Romberg has found myocarditis present in 6 out of 11 cases in typhoid fever (ten children); in 7 out of 8 cases in scarlatina (six children); 2 cases of scarlatinal nephritis and in 4 cases out of eight in diphtheria (children); in 4 cases examined by Ribbert, myocardial changes were found; in the latter disease myocardial changes are referred to by a host of authors, French, German, English and American, beginning with Bristowe, in 1859, and ending with Heubner, in 1903. Arthur Neumann (1900) examined seventy children for dilatative heart weakness, amongst which number he found eight affected. I was interested in reading the short histories appended to the article to find that six had had infectious diseases; these had had diphtheria alone or diphtheria and other diseases, one scarlatina alone; one had tuberculosis, which need not be considered, and in one only there was a negative history of some infection.

The mechanism of the production of acute myocardial insufficiency is very simple, then; some damage done the myocardium; immaterial whether primarily an interstitial myocarditis (E. Romberg) or primarily a degenerative process and secondarily an interstitial process (Ribbert). Nor does it interest us for the present to discuss whether it be the toxins or the bacteria which produce the troubles (Lees). When a sufficient change takes place in the myocardium so that it becomes insufficient, then the reaction on the part of the heart as a whole is sufficiently well marked to assume a distinct clinical picture. At first there is noticed a diminution in heart force and arryhthmia; then follows dilatation of the left heart, then of the right heart, with relative insufficiencies of their valves; as soon as the right heart is seriously affected, marked enlargement of the liver. I have seen the latter descend to the level of the umbilicus. Sometimes the right heart is affected first; but not commonly, as affections of the myocardium follow the rule of all acquired, noncongenital diseases of the heart, viz., that they are more common on the left side. If to a damaged myocardium there be added a predisposing cause, especially affecting the right heart, as whooping-cough or pseudopertussis, the right heart first becomes insufficient. The signs and symptoms vary in different diseases, as will be shown further on, but upon the whole there is produced weakness, irregularity of pulse and heart impulse—tachycardia or bradycardia; a broadening of the heart dullness and bruits heard most commonly over the apex, the mitral and the tricuspid area, but frequently, also, over the base. To this class belong the 2 cases I referred to in my contribution to Jacobi's Festschrift; in 1 case the myocardial change was obesity; in the other it was due to three attacks of influenza, for which disease Huchard has established myocardial changes.

Diphtheria, of all the acute infections, most frequently produces myocardial insufficiency. Schmaltz claims that acute myocarditis occurs in from 10 to 20 per cent. of all cases of diphtheria; fortunately, not all of these lead to myocardial insufficiency. The process of myocardial insufficiency, which has been confounded with other methods of heart death in diphtheria, does not begin before the end of the first week of the disease, is most common during the second and third week and may develop as late as the sixth or eighth week. The symptoms are those already described, *i.e.*, when there is only diphtheritic myocarditis. The patient dies when the diseased myocardium can no longer overcome the demands made upon it, especially from distension; primarily then from heart paralysis; but in addition, secondary effects upon innervation and possibly, upon oxygenation, although the latter is rare, as is evinced by the absence of cyanosis. But not enough stress, in my opinion, can be laid upon the fact that pure myocarditis is not the only cause that produces heart death in diphtheria; there are at least two other processes that complicate it. The first of these is the effect of the diphtheria toxin upon the cerebral vasomotor centre first discovered by a series of ingeniously conducted experiments by Romberg and Pässler and fully verified by Heinike, Rolly, v. Stejskal. As the result of this action, paralysis of the vasomotors takes place; therefore, dilatation of the blood vessels, with the result that the blood is not propelled normally. Unfortunately, the parts supplied by the splanchnic nerves will contain so much blood, the liver alone containing one-quarter of the whole amount of the blood in the body, that circulation becomes an impossibility. The result is, that the heart simply "bleeds itself" into the splanchnic area, and when, after a time, very little or no blood flows into the right heart, all of it being stored up in the vessels of the abdominal cavity, systolic contraction ceases. Again, here the symptoms are fairly characteristic. In diphtheria it is the form of heart death that occurs very early in the disease, as I have seen it as early as the third day; this before the days of antitoxin. The dominant symptom is increasing rapidity of the pulse, not marked changes in rhythm, but continuous diminution in filling of the arteries, so that the pulse becomes weaker and weaker, the arteries more and more empty, until it no longer can be felt. The condition of the heart is negative; no dilatation, no bruits, no stases anywhere, therefore no enlargement of the liver. But, again, here a continued diminution in force and a constant increase in rate; this is characterized by dullness of heart sounds, especially the first; and, finally, by a cessation of the heart's action. The aspect of the patient is more or less characteristic; pale, more or less restless, no brain symptoms, *i.e.*, no unconsciousness. The patient feels weak and is unwilling to move. This form of heart death, in pneumonia, I have seen in infants; the abdomen becomes much enlarged. Romberg and Pässler have shown that the diplococcus pneumoniæ produce the same results upon the vasomotors as the diphtheria bacillus.

The whole process, when thoroughly developed, runs its course in a short time, from 6 to 18 or 24 hours.

The second method, complicating the clinical picture, is an affection of the vagus. At the present day the myocardial origin of symptoms, following the physiological research work of Gaskell and of Engelmann, is so much in the ascendant, that the origin of symptoms, because of affections of the vagus, is rather frowned upon. The most recent physiological investigation of Pawlow, in that he kept dogs alive for over five months after bilateral vagotomy without producing changes in the heart, seems to confirm this view. But that the vagus does have an effect upon the human heart is shown by the experiment of Czermack upon himself. But even Engelmann shows that nervous influences play a decided rôle in influencing the number of cardiac contractions, and Lommel, in a most exhaustive paper on arrhythmia, has come to the conclusion that "organic heart diseases never produce it"; they are simply neuroses and, as he has seen it, may be produced by irritation of the vagus centre in diseases of the brain. The latter point is especially valuable, as he says, in permitting us to differentiate organic diseases of the heart from functional ones. It is thoroughly established that, in diphtheria, the vagus is frequently affected, and it is also thoroughly accepted that in a large number of infectious diseases we have arrhythmia. If these two facts be put together with the new ones established by Lommel, we can certainly not be far wrong in stating that in diphtheria arrhythmia may be due to disturbance of the vagus tonus. The next question that arises is the possibility of producing heart death by vagus affection in the human being. It must be confessed that we have no evidences upon this subject, for Czermack, after having caused his heart to stand still by pressure upon his vagus, always came to again. But the little that has just been said will certainly justify the conclusion that, even if the vagus may not produce heart death, the effects of its irritation in a myocardially insufficient heart may hasten the fatal outcome. For therapeutic purposes the fact that myocardial insufficiency in diphtheria may not be a pure process, but complicated, at least, by the two other factors just discussed, seems to me to be very important.

Next to diphtheria my own experience with acute myocardial insufficiency has been most extensive with the septicemia of influenza. Here again we have a complex process, the result of infection with the influenza bacillus and secondary infections with pus producers, notably streptococcus and the various staphylococci; in by far the greatest number of cases the secondary infection coming from the respiratory tract, but sometimes from the gastrointestinal tract. I have seen no case in connection with influenza in which the mechanism of Romberg and Pässler seemed to play a very important rôle, although the influenza toxin seems to have a direct effect upon the vasomotor, as is shown by the change in the pulse temperature ratio. All the cases I have seen have been accompanied by more or less cardiac change. The worst case in children that has come under my observation which has recovered I herewith report.

A. A., seen in private practice, *aet.* seven years. Family history, tuberculosis on mother's side, neuroses on father's side. The child was bottle-fed as an infant with normal results; she has had one previous attack of mild influenza; otherwise she has been well. On October 27, 1902, I was first called to see her. There was present a house epidemic of influenza, she being the last one of the children to come down with it. It was the ordinary respiratory form, but in a short time developed into pseudopertussis, for which she received quinia hydrobromatum with good results as far as the number of attacks was concerned. On the morning of November 7th I was again called to see her. The statement was made that she had passed a restless night and had seemed very feverish. Upon examination there was found a temperature of 105.4°F., pulse 122 and respiration 34. No evidences of any organic lesion, even the cough had disappeared. Notwithstanding hydrotherapy, the temperature reached 106.5°F. that evening, with a pulse rate of 140 and respiration 40. The patient became unconscious, took medicine with difficulty, became jerky and was very nervous. At eleven in the evening she became partially conscious, the temperature having been reduced to 104°F., pulse 120, respiration 32.

November 8th. May be summed up as beginning with a temperature 102.6°F. in the morning, the pulse remaining at 140, and the respiration 32. The maximum of temperature that day was 105.4°F., pulse and temperature not varying much from the morning's rate. The nervous condition improved, as the temperature came down the cough began to reappear, all other functions being normal. The urine contained a small quantity of albumin, nothing being found microscopically. Throughout the course of the disease there was no evidence of nephritis. On my evening visit I found the heart dullness somewhat increased, no bruits. At noon massive doses of unguentum Credé were used. The night was better than the former one, but still some delirium upon awakening.

November 9th. Found the patient with a morning temperature of 99.2°F., pulse 98-105, respiration 24. The maximum temperature was 100.2°F., pulse 100-104, respiration 24-26. Cough has reappeared, nervous symptoms gone, but the pulse was decidedly irregular. For this reason stimulants were given. Increase in heart dullness seemed more marked than before.

November 10th. The temperature in the morning was subnormal, pulse from 84-88 and intermittent, respiration 24. From this time on for nearly two months we had subnormal temperature in the morning. The pulse even on this day sank to 72 and rose to as high as 96. The heart as before.

November 12th. I found the child pale, cyanosed, breathing with difficulty and sweating profusely. Pulse was irregular, from 74-78, and heart exertion would bring it up to 100, the pulse becoming emptier and more irregular. Examination of the heart revealed heart dullness beyond the right border of the sternum, left auricle enlarged, systolic bruit at the apex, and a diastolic bruit at the base. Liver enlarged so that its free border could be felt 2 cm. below the free border of the ribs and painful upon pressure. By means of absolute quiet, stimulants, codein for the cough, strophanthus, then resistant movements, the child was able to sit up in bed on November 21st for the first time. During this time the pulse varied from 64 to 88, the former representing a bradycardia in a child. The peculiarity of the pulse, as far as rate is concerned, is best represented by the record on November 21st, when she was allowed to sit up in bed. Under observation for an hour, the pulse rate, counted every fifteen minutes, was 72, 76, 78, 78. When she sat up in bed the second time, on the same day, the pulse varied from 88 to 100, showing the peculiar irritability of the heart's muscle. The hepatic sign of myocardial insufficiency lasted only eighteen hours. So unreliable was the heart's action, although the dullness had diminished and the bruit at the base had disappeared, that I did not venture to allow the child to get up until December 6, 1902, about one month after the onset of symptoms; permitting her then to sit up in bed before allowing her to get up, for three hours at a time, her pulse being watched at regular intervals. In the beginning of her period of sitting up in bed, if, as was natural in a child of her age, notwithstanding all precautions that had been taken, she would move rapidly, her face become pale, she would again sweat freely and the heart dullness would again increase. On the day before she got up, being allowed to sit up in bed for three hours, the pulse was 98 at the beginning and 80 at the end of the time. It is interesting to note here, that for some time any exertion would manifest itself by a reduction in pulse rate; this lasted for eight days, and it was only after this manifestation had disappeared, that I felt safe in pushing the heart to further exertion. On December 23d she was allowed to walk out of her room for the first time, and by this time the bruit at the apex was very faint, no enlargement of the heart could be detected. On Christmas day she was allowed to walk downstairs, her pulse now varying from 90 to 94, but still intermittent; in five days after this she was allowed to take a drive; January 9, 1904, she was allowed to walk upstairs and was then discharged. I took occasion to examine her occasionally and found her pulse still continuing to intermit, the bruit gradually disappearing and the heart losing its irritability. I examined her for the last time on May 17, 1904. She goes to school, romps about with the other children, does not have dyspnea on exertion and seems to be perfectly well. Her heart is of the normal size, there is no bruit anywhere and none can be brought out by exertion. The mother tells me that her pulse still intermits occasionally, but I could not find it so after having examined it for five minutes.

According to my view, we here had a myocarditis, producing acute myocardial insufficiency as the result of a septic infection engrafted upon an influenza. The bruits were due to relative or muscular insufficiencies, the great irritability of the heart especially speaking for myocardial trouble. It seems to me that this can be looked upon as a pure case of myocarditis, although the possibility of an endocarditis cannot be absolutely excluded. Contrary to Romberg's view, I believe that all the symptoms can be explained upon the basis of this assumption; even the bradycardia which we know to be due, at times to fluctuations of intracardiac pressure, diminution (Ludwig and Thiry) or great increase (Heidenhain) may be explained on this assumption. The absence of edema, one of the points that Romberg insists upon as militating against the existence of myocarditis in influenza, is explained by the fact that the myocardial insufficiency is not persistent. The pallor and sweating is due, not to primary vasomotor disturbances, but to sudden changes in the centres, the result of the dilatation of the heart. But the fact that other processes interfering with circulation exist in influenza cannot be denied.

It would extend this paper beyond the proper limits to discuss acute myocardial insufficiency in connection with scarlatina, typhoid fever or rheumatic fever; in all these affections myocarditis is not uncommon, acute myocardial insufficiency, however, is rare in children; although I have seen one fatal case in scarlatina with scarlatinal nephritis.

Our treatment has been added to since Romberg and Pässler's investigations have been accepted, but only when this complication exists. For uncomplicated myocardial insufficiency the first principle is absolute rest. The digitalis group of drugs may be used; their efficacy depends largely upon the amount of myocardium affected. Predisposing causes should be controlled; in the case reported it was the pseudopertussis which was easily controlled by very small doses of codein. Stimulants will be required in most of the cases from alcohol to camphor or ether, according to the severity of the case. The convalescence must be especially guarded and, for the purpose of strengthening the myocardium, mechanical means are invaluable: Swedish movements, massage, vibratory methods. The diet is the same as in all myocardial affections. Laxatives that act violently should be avoided. Strychnia may be used for its general tonic effects; except in toxic doses it has no effect upon the heart nor upon the vasomotors. Nitroglycerin should never be used, unless there be anginous attacks; at all events, care must be taken to exclude the existence of vasomotor paralysis, when it does harm.

For the vasomotor paralysis Pässler has shown experimentally that digitalis produces only very transitory results, no effects upon the blood vessels; no effect is produced by alcohol or ether, possibly a bad one on the vasomotor centres; ergotin is without value; camphor produces good results, but the best are produced by caffein. Saline infusion produces temporary results and abdominal massage fairly good ones.

My own method, which I have used with good results in 2 cases, is as follows: hypodermic injection of adrenalin; this drug has an elective effect upon the blood vessels supplied by the splanchnic nerve. Its effects are very transitory; therefore, the injections have to be repeated every two hours. Saline transfusions are used in the beginning in order to keep up the heart's contractions. Ice-bags are put upon the abdomen; stimulating the splanchnic reflex. In one child I was able to bring the pulse down from 140 to 60 by the use of these alone. After the most violent symptoms have passed over, then caffein soda-salicylate is given, every two to four hours, alternating with the adrenalin, which is gradually dropped. The convalescence is treated as is indicated in the case reported.

DISCUSSION.

DR. ROTCH.—I hope that the real nature of these cases of acute dilatation seen in young children will soon be cleared up. All have seen such cases which have lasted but a short time. I have treated these cases with absolute rest as advocated. I believe that, as a rule, the general practitioner does not recognize these cases.

DR. JACOBI.—It has only been within the last two dozen years that the myocardium has received much attention. Our forefathers simply made a diagnosis of heart inflammation and let it go at that. With better means of diagnosis we went a little further and diagnosed pericarditis and endocarditis, but myocarditis was seldom thought of. It has been only within the last ten or twelve years that the profession has awakened to the necessity of studying the myocardium and its diseases more profoundly.

As a matter of fact, in dealing with any severe case, we are not dealing with an uncomplicated condition. It is not infrequent now to find endocarditis, pericarditis and myocarditis existing at one and the same time; autopsies show this to be true. It has been particularly so since Englemann and others showed the importance of the heart muscle when removed from the influence of the nervous system that more attention has been paid to the changes in the muscle itself.

There are two forms of myocarditis recognized, viz.: (1) simple parenchymatous degeneration, and (2) the real interstitial inflammation. Now and then one sees an old cicatricial condition more or less extensive. Parenchymatous degeneration shows itself in different ways. A few years ago we were told by Hektoen, of Chicago, that this degeneration went as far as fragmentation; that Dr. Hektoen himself recognized as a mistake, occasioned by his mistaking the postmortem for antemortem changes. This fragmentation should no longer appear in the text books. There is, however, a parenchymatous change resulting from the action of bacilli or toxins in infectious diseases which is spoken of as inflammation, as a myocarditis. We see such changes after every infectious disease. Dr. Forchheimer has questioned the possibility of attributing it to bacterial action or to toxins; there is one fact we are all acquainted with—that there are more toxins than bacteria that gave rise to the symptoms. In pneumonia we know the particular danger is not so much during the acute stage in many cases as when the crisis comes; then at once the temperature falls, the pulse falls and becomes irregular, and the picture changes; if the patient dies on the fifth, sixth or seventh day it must be due mostly to the toxins that have developed during the course of the disease with their particular influence on the heart.

In reference to the enlargement of the liver Dr. Forchheimer has correctly stated that, if the right heart were chiefly involved, the liver would swell. The liver would be found swollen to a certain extent in cases of many or most acute diseases of childhood. When we have heart symptoms, with a swollen liver coming on rapidly, with slight edema about the hands and feet and also about the face for the first few days, one can be pretty certain that there is a myocarditis existing. The large swollen liver is associated, when at the beginning of the disease, with a myocarditis and not so much with an endocarditis. In myocarditis it is characteristic to find a moderately sized heart in cases where the cardiac symptoms have existed for years. Sometimes in myocarditis the heart symptoms are localized more about the mitral than about the aortic valve and frequently with a murmur, this is why incorrect diagnoses have been sometimes made. If the murmur has existed for a long while, no matter whether it was localized or universal, if there was no increase in the size of the heart, it means a myocarditis. There are more cases of myocarditis with no enlargement of the heart than with it. On the other hand, endocarditis with valvular affection will soon lead to dilatation and hypertrophy.

The questions regarding the toxins or bacteria will possibly be changed in a few years. Vaughan and Ehrlich believe that bacteria are not single bodies. Vaughan recently showed me two bottles of different toxins made from the same bacillus. Ehrlich believes the poison of diphtheria is not one but two, and he attributes the paralysis of diphtheria to a poison quite different from that which gives rise to the first symptoms. We are no doubt a long distance from the end of our knowledge regarding this.

I do not agree with Dr. Forchheimer in regard to treatment. If there is anything that I dislike to give in the beginning of acute myocarditis it is digitalis. Digitalis puts too much labor upon the heart; and so does strychnin. In chronic myocarditis I have found that strychnin makes the patients worse and opium is better. In acute myocarditis I rely upon cold applications to the heart, the ice-bag for a short time, not for a long time in young children. I also place much confidence in codein and in the iodids. I do not dislike the nitrites when the arteries are poorly filled. Absolute rest is enforced. In myocarditis with danger from overstrain I should rather rely upon some opiate, iodid or nitrate. There is no better thing than rest in bed for weeks and months. Place the patients in bed in a cool room, open the windows and give them absolute rest.

DR. FORCHHEIMER.—In closing the discussion, I would say that the object of this paper was to establish some form of treatment in myocardial insufficiency, which could be applied in the acute as well as the chronic cases. I have tried to establish two clinical pictures, first myocardial insufficiency, due to an acute myocarditis as a pure process and, second, myocardial insufficiency as a complication.

Dr. Jacobi and I differ only on the surface. I have not taken up the treatment of myocarditis. I agree with what he has said regarding the treatment of myocarditis. I rarely use digitalis there and also place the utmost reliance upon rest. Digitalis should never be used except for the specific indication of myocardial insufficiency, acute or chronic, and its value in this condition is dependent largely upon the quantity of healthy myocardium it can affect.

DR. JACOBI.—I feel sure that Dr. Forchheimer would not speak of insufficiency of the heart as a functional trouble. We have used this phrase "functional trouble" too often and I think I shall not use it so frequently. I regard the particular cause of the disturbance as situated in the structure of the muscle.

Treatment of Cranial Depression in the Newborn.—Cranial depression in the newborn is usually the result of some abnormal difficulty in labor or delivery. P. Baumm (*Centralbl. f. Gynäkolog.,* May 9, 1903) reports 4 cases in all of which this condition was the result of difficult labor because of narrow pelves, the pressure of the promontorium in 3 cases producing deep impressions in the skull-bone, and in the fourth case causing fracture of the frontal bone. In the first case, troubled how to restore life, he thought of a corkscrew, and after sterilizing the instrument bored into the bone, gave a pull and suddenly the skull was rounded out and the child's breathing and heart action improved for a time, but it soon died. The subsequent section showed no injury to the brain but an internal cranial hemorrhage which, however, seemed to have no connection with the operation. The second case was but a repetition of the first; in the third, however, the child lived and became healthy and strong. In the fourth case as the skull was fractured the corkscrew was more easily inserted, the skull was more readily restored to its normal shape with a complete recovery of the infant. In these cases it may be objected that the child would have lived without the operation, but it is probable that there would have been permanent deformity with defective brain action. Hence Baumm feels justified in recommending the use of the simple procedure mentioned in cases not too difficult and always to strive for the removal of any skull depression.—*American Medicine.*

GASTROINTESTINAL TOXEMIA.*

BY B. K. RACHFORD, M.D.,

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Gastrointestinal toxemia as differentiated from autointoxication is a systemic intoxication, produced by poisons formed in and absorbed from the gastrointestinal canal. Autotoxins, excreted into and afterward absorbed from the intestinal canal, cannot, therefore, be classed as intestinal toxins.

Our knowledge of the toxins, which contribute to intestinal intoxication, is not as yet upon a very satisfactory chemical basis. We know, however, that the intestinal contents, even under normal conditions, are toxic, and we know, also, that under certain pathological conditions, the toxins produced by the bacterial fermentation of foods in the intestinal canal very greatly increase this toxicity, with the result that a profound systemic intoxication is produced. Our present knowledge, however, is not as yet sufficient to make it profitable for us to attempt to differentiate clinically, between the symptom groups produced by normal and abnormal intestinal toxins.

INTESTINAL TOXINS.

The poisonous albumoses, which are the intermediate bodies formed in the digestion of albuminous food stuffs, may be mentioned as contributing to the toxicity of the intestinal contents, but these bodies, under normal conditions, are robbed of their toxicity, in their passage through intestinal epithelium and liver cells, during the process of absorption. The body is, therefore, carefully guarded against intoxication from this source. It may be, however, that when these protective mechanisms fail, through disease or functional disturbances of these filtering organs, these bodies may act as toxins.

Bacterial fermentation is the great source of intestinal toxins. It is possible that the poisons produced by bacteria in the intestinal canal may have their origin from three different sources.

(1) The components of dead bacteria may furnish a certain

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* Read before the Sixteenth Annual Meeting of the American Pediatric Society, Detroit, Mich., May 30, 1904.

amount of proteins, some of these bodies we know to be poisonous, as for example, tuberculin, which is a protein of the tubercule bacillus. The bacillus of glanders, and other bacilli also contain poisonous proteins, and it is not impossible that poisons of this type may at times be a factor in producing intestinal toxemia. The rôle, however, which these bodies play in intestinal toxemia has not as yet been determined, and is probably not very great.

(2) Living bacteria in the intestinal canal, may and do excrete ferments or toxins, capable of producing the most profound nervous symptoms. These specific toxins of bacteria are believed to be very potent factors in producing intestinal toxemia. It is evident that the character and virulence of these toxins will depend largely upon the microorganisms producing the fermentation, since certain microorganisms are capable of eliminating much more virulent toxins than others. Whether all of these cell toxins belong to the ferment class is a question as yet undecided. Pathologists, at the present time, incline to the view that the specific toxins are closely allied to, if not identical with, the ferments.

(3) Substances produced by bacteria from the culture media are possibly the most important source of intestinal intoxication. Among the poisons of this class, the ptomains probably hold the most important place. These basic compounds, resembling the alkaloids in chemical structure, are capable of producing the most severe systemic intoxication. The virulence of the ptomain formed depends not only upon the microorganism, but also upon the character of the food material in which it is growing. Certain food materials, such as cheese, milk, meat, and other albuminous foods, when acted upon by certain bacteria, may become very poisonous owing to the development of poisonous ptomains.

While ptomains are the most poisonous, and so far as the etiology of intestinal toxemia is concerned, the most potent of the transition products produced during the process of putrefaction, yet there are a large number of other bodies produced in this way, which may also be factors in producing intestinal toxemia. Among these bodies may be mentioned, indol, skatol, phenol, cresol, leucin, tyrosin, ammonia, sulphuretted hydrogen, volatile fatty acids, oxalic acid, uric, and the xanthin bodies. Of these bodies, however, it must be said, that indol is probably the only one, whose etiological relationship to nervous symptoms has been satisfactorily demonstrated. Herter and others have recently shown that indol, one of the most constant and readily absorbed products of the bacterial fermentation of albuminous food stuffs in the intestinal canal is toxic, and capable of producing headache, and increased nervous excitability. It is not improbable, therefore, that this body may at times, under the conditions named, contribute to the production of these symptoms.

Indirect Etiological Factors.—Constipation is the most important predisposing factor of both acute and chronic intestinal toxemia. It acts by retarding the passage of food materials along the intestinal canal; this gives time for hyper-fermentation, and for the production of toxins by bacterial action on the intestinal contents.

Too much food, indigestible food, and food that has already undergone bacterial fermentation, may also be important factors in producing, or in prolonging, either an acute or chronic intestinal toxemia.

Lack of fresh air and exercise are also important predisposing factors.

The digestive idiosyncrasies of the individual are predisposing factors which manifest themselves not infrequently. These idiosyncrasies are sometimes made manifest by the taking of such foods as milk, eggs, oatmeal, shell-fish, strawberries, acids and wines. One of the most common of the nervous syndromes developed in this way is urticaria. This symptom group is not uncommonly associated with an acid fermentation in the intestinal canal and may in certain instances be classed as an acid intoxication of intestinal origin.

In studying the etiology of intestinal toxemia, it is necessary to bear in mind the important rôle which the liver plays in protecting the body against intestinal toxins. These bodies can reach the general circulation, and thereby produce systemic intoxication, only by passing through the liver; and in leaving the intestinal canal these bodies pass through the portal vein, and thence through the liver to be worked over by the liver cells, and filtered through by way of the hepatic vein, and lymphatics to the general circulation. In passing through the liver, however, these intestinal poisons are under normal conditions rendered harmless. This socalled filtering function of the liver stands guard between the poisons absorbed from the intestinal canal, and the general circulation.

One may suppose that as long as the toxins in the intestinal canal are not greatly increased in quantity, and as long as the filtering function of the liver is intact, the intestinal toxins cannot produce systemic intoxication, and one may also suppose that systemic intoxication may be produced by failure on the part of the liver to perform its function of filtering the poisonous blood in the portal vein, or from a great excess of intestinal toxins, which may so overwhelm the liver that these poisons find other channels of entrance into the general circulation.

It is well to keep these facts in mind, since in some instances the liver itself may be primarily at fault in chronic intestinal toxemia. This organ, therefore, must be kept under supervision in the treatment of all chronic neuroses, which are supposed to be either wholly or partly caused by intoxications from the intestinal canal.

Chronic intestinal toxemia may also be an indirect cause of nervous symptoms, by the profound changes it sometimes produces in the blood, contributing as it does to the production of chlorosis, and other forms of chronic anemia. These anemic conditions may in turn cause malnutrition of nerve centres, and in that way produce chronic nervous irritability, and the long chain of nervous symptoms which are not uncommonly associated with profound anemias.

Chronic appendicitis, especially in the adult, is not an uncommon cause of intestinal toxemia. This condition may exist for a long time without being marked by distinct attacks of acute appendicitis. In these cases the symptoms of intestinal toxemia, such as headache and general nervous irritability, may be associated with a mucous colitis, tenderness in the region of the appendix, an occasional colic, and ofttimes a sensation of weight and discomfort in that region on active exercise.

ACUTE INTESTINAL TOXEMIA.

Acute intestinal toxemia is more common in the infant and young child than it is in the adult. This greater susceptibility to the acute forms of intestinal toxemia is probably due to a number of causes, the most important of which is the great irritability and the immaturity of the nervous system of the child. This instability of the nervous system of the child makes it possible for slight disturbing factors to produce maximum results. A small quantity of poison absorbed from the intestinal canal may, through its action on the susceptible nervous system, produce high fever, convulsions, and other pronounced nervous symptoms, while the same quantity of poison might be easily resisted by the stable nervous system of the adult.

It is also true that severe albuminous fermentations capable of producing virulent toxins are more common in the child than they are in the adult. This may be due to the fact that the hydrochloric acid function of the stomach is not as well developed in the young child as in the adult, and therefore not capable of exercising the same control in preventing intestinal fermentations. It may also be possible that the filtering function of the liver, which is at all ages one of nature's safeguards against intestinal toxemia, is not as well carried out in the child as it is in the adult. But whatever may be the explanation, acute intestinal toxemia is much more common in the young child than in the adult.

While our knowledge of the poisons which produce acute intestinal toxemia is very unsatisfactory, yet there is no doubt but that such a toxemia exists, and that it is one of the most important factors in producing nervous symptoms in the young child, and a somewhat less important factor in producing nervous symptoms in the older child, and the adult. Acute intestinal toxemia occurs so commonly in the infant and young child that we are justified in suspecting this cause, where no other apparent cause presents, as a factor in producing sudden rises of temperature, and acute convulsive disorders.

The nervous symptoms which result from acute intestinal toxemia, may vary in severity from a slight fever, with exaggerated reflexes, to a high fever and convulsive disorder so severe as to produce death. Every physician recognizes the importance of acute intestinal toxemia as an etiological factor in the production of dangerous nervous symptoms in the infant and child, and everyone has seen these convulsive disorders followed by high fever and unconsciousness, quickly relieved by cathartic medication, and cured by intestinal antiseptics and diet.

CHRONIC INTESTINAL TOXEMIA.

Familiar as we are with acute intestinal intoxications, we are slow to recognize the importance of chronic intestinal intoxications, which are produced no doubt by the same intestinal toxins, absorbed in smaller quantities and over a longer period of time.

As the child gets older and the nervous system develops, and acquires greater powers of resistance against these toxins, then the acute intoxications become less, and the chronic intoxications more important, so that in the older child, these severe forms of acute intestinal toxemia are infrequent as compared with chronic intestinal intoxications.

It is the chronic form of intestinal intoxication to which I wish to call special attention, because its great importance as an etiological factor in producing nervous symptoms in children is commonly overlooked.

Chronic intestinal toxemia may be associated with diarrhea, but is not uncommonly associated with constipation. It must be remembered that constipation may exist even when the child has a movement from the bowels every day, or even two or three movements. These movements may be fragmentary and therefore incomplete, or they may be hard and dry showing that they have remained in the intestinal canal twenty-four or more hours longer than they should.

In order to prevent hyperfermentation, and increased absorption of intestinal toxins, the food materials must not be retarded in their passage through the intestine, and when ejected should be moist and have the appearance and form of the normal intestinal evacuation.

So important, do I believe, is the rôle played by chronic intestinal toxemia in the production of neurotic diseases in the child, that I invariably begin the treatment of nervous diseases whatever the symptom group may be, by a careful investigation of the intestinal canal, and throughout the treatment of these cases I give careful attention to any abnormalities of digestion.

The child should be fed upon food carefully adjusted to its digestive capacity, and there should be no retardation of food stuffs in their passage through the intestinal canal.

Chronic intestinal toxemia is probably a factor in the production of a large group of nervous symptoms, and may, as I believe, aggravate the symptoms of certain neuroses, which are produced by etiological factors entirely foreign to the intestinal canal. Among the symptoms which may be produced or exaggerated by intestinal toxemia may be mentioned, malnutrition, anemia, headache, general malaise, fever, heightened reflexes, convulsive disorders, restlessnes at night, night terror, general nervous irritability, hysterical and neurasthenic symptoms, incontinence of urine, brachicardia, hyperesthesia, paresthesia, nervous anxiety, psychoses, and, in rare cases, a syndrome resembling meningitis.

The following case while somewhat unusual in the character of the nervous symptoms which it presents, may be taken as a good example of neurotic disease produced by intestinal toxemia.

SEVERE NERVOUS SYMPTOMS PRODUCED BY INTESTINAL TOXEMIA.

Boy, age five years, has never been strong, has had stomach and intestinal trouble very frequently during his life. At the present time, he is thin, anemic, and has the appearance of being malnourished. During the past year he has been very nervous, and this nervousness has recently very greatly increased, so that at the present time he is irritable, cries on slight provocation, is very restless at night, and has certain peculiar nervous attacks, which led his mother to seek medical advice. These attacks come on suddenly with dizziness; the boy falls to the ground, and his mother thinks he does not lose consciousness, and is sure he has no convulsive movements. Some minutes elapse before the boy is able to regain his feet. These attacks are followed immediately by severe headache, and more or less nausea. Following these attacks, the boy is put to bed, and soon falls into a profound sleep, which may last some hours. From this sleep he awakes almost or quite as well as before the attack.

He has had in all, seven attacks during the last year, and three of them have occurred within the last two months. These attacks which seem to occupy the border land between migraine and epilepsy have not only increased in frequency, but also in severity.

The family history throws no light on the etiology of these attacks. The father is phlegmatic, the mother is somewhat nervous, but there is no history of neurotic disease in the family.

A careful examination failed to show any reflex factors which might be etiologically related to this neurosis.

The mother says that for a long time the boy has not been normal in his intestinal canal. Diarrhea has alternated with constipation. There has been much flatulency. The boy has a fitful appetite, and craves food he should not eat. He has been fed almost anything, because "he ate so little," the mother thought "it would not hurt him."

This history strongly suggested the probability that the nervous symptoms might be due to intestinal toxemia.

An examination of the urine, which was high colored, and had a specific gravity of 1023, showed no albumin, no sugar, but a marked excess of indican.

Treatment.—A dose of castor-oil, followed by a diet, carefully regulated to suit the patient's digestive capacity; active life in the open air; a diastase and iron preparation after meals. Under this treatment the boy's general health gradually improved. He gained slowly in strength and weight. His general nervous irritability, which was greatly improved from the beginning of the treatment gradually disappeared. He never had any of his peculiar attacks after the treatment was begun. Three months later he was discharged well.

Intestinal toxemia, acute and chronic, is not an uncommon complication of other diseases, such as typhoid fever, malaria, tuberculosis, and chronic diseases of the gastrointestinal canal.

As a complication this condition is probably met with more commonly in the convalescence from typhoid fever than in any other disease. The physician's unjustifiable fear of cathartics in this disease is ofttimes prolonged into the period of convalescence, and as a result, fecal accumulations occur, which result in an intestinal toxemia which prolongs the period of convalescence many weeks.

The urine furnishes valuable evidence of the existence of intestinal toxemia, and ofttimes our attention is called to this condition by the presence of an excess of indican, and the ethereal sulphates in the urine. The presence of these substances in the urine is sufficient reason to suspect a hyperfermentation of albuminous food stuffs in the intestinal canal, and also usually means the retardation of these food stuffs in their passage through the canal, but the absence of indican does not rule out intestinal toxemia, since we may have severe forms of intestinal toxemia in which indol is not an etiological factor.

The etiological importance of the vegetable organisms in producing intestinal toxemia, must not cause us to altogether overlook the possible rôle which animal parasites may play in these pathological processes. In the present state of our knowledge, however, it is not possible for us to make any positive statements as to the exact rôle, which intestinal worms play in producing gastrointestinal toxemia. Lynch in Grancher and Comby's "Maladies de l'Enfance" says that intestinal worms may be responsible for a large group of toxic symptoms, such as urticaria, ringing in the ears, syncope, vertigo, palpitation of the heart, insomnia, mental anxiety, hypochondria, general nervous irritability, fever, delirium, and convulsions.

While this group of severe toxic symptoms may be associated with intestinal worms, it does not necessarily follow that they are produced by the absorption of poisons which have been excreted by them. Lynch himself points out the possibility of these symptoms being produced in part at least, by the secondary fermentations, which the presence of these parasites excite in the intestinal canal, and notes, also, the possibility of severe symptoms being produced, reflexly and mechanically by their action.

Leukart observed that the ascaris lumbricoides excreted a poison capable of producing toxic symptoms. Huber, von Linstow, Chanson, and Raillet, state that this same worm contains an irritating substance capable of producing a toxic effect on the human organism, and a number of other French authors state that this worm excretes an irritating and convulsive substance. Cao, on the other hand, after carefully investigating the subject, concludes that the evidence at the present time does not justify us in attributing toxic symptoms to the action of poisons excreted by intestinal worms.

While there is considerable difference of opinion as to the etiological relationship which exists between animal parasites and intestinal toxins, it seems to be rather generally conceded that these parasites may either directly or indirectly produce intestinal intoxication. In this connection the following case is of interest:—

SEVERE GENERAL CONVULSIONS PRODUCED BY NEMATODES IN THE INTESTINAL CANAL.

I was called in consultation to see a girl, twelve years of age, who had been having convulsions for several hours. She was a strong, healthy German, with no tendency to neurotic disease. After a few days of slight indisposition, on the part of the intestinal canal, she suddenly had a severe convulsion. On my arrival I found that the physician in attendance had been working with her for some hours, and that during this time, she had had a number of severe convulsive seizures. In the intervals between the convulsions she was unconscious and had considerable muscular rigidity.

After controlling the convulsions with chloroform, the urine, drawn with a catheter, was found to be normal. Sulphate of magnesia was given by the mouth, and by rectal injections. Some hours later a large ball of round worms (ascaris lumbricoides) was passed with a large amount of fecal matter, and very soon thereafter the patient was restored to consciousness, and the next day was well.

There can be no doubt but that this was a case of intestinal toxemia. The child's age, previous good health, and stable nervous system speak against the reflex origin of these convulsions; and I may further state that while it is impossible for one to exclude absolutely other causes of intestinal intoxication, the discharges from the intestinal canal, were not of such a character as to indicate that the poisons were produced by the fermentation of the intestinal contents.

DISCUSSION.

DR. JACOBI.—Our predecessors knew of many such cases and the earliest books contained reports of such cases. In those times they were more in the habit of partaking of raw foods. Where raw materials are eaten, as raw vegetables in Germany and Hungary, they will produce a group of symptoms such as described. Irritability of the nervous system was certainly present and I believe that anemia of the brain would produce this, or rather predispose to it. I have frequently thought that such an anemia would cause insufficient secretion of both gastric and pancreatic juices and so interfere with normal digestion. I am glad the doctor spoke of the frequent prominence of indican in the urine in such cases, particularly because it is so very easy to make the diagnosis of it. In a great many cases indican will be found and therefore it is a very important diagnostic factor.

Unless I examine the urine in every case of illness occurring in both adults and children, particularly in every doubtful case, I feel that I have neglected something of great importance. Besides, nothing is easier than to obtain a specimen of urine from a baby. In a number of cases it is sufficient to rely upon cleanliness and the application of a large enough bundle of absorbent cotton to the parts; then, when the child has urinated, with a clean hand squeeze the urine into some clean receptacle. I myself usually rely upon the use of the catheter which is easy of introduction in the smallest children, easier than in most adults. Newly-born boys do not have strictures in more than 1 to 10,000 or 15,000 cases, while in adults it has been suggested that strictures were much more frequent. Some difficulty might be encountered in small girls, but not much if one used the eyes carefully; then one did not usually miss the urethra orifice. Failure to examine the urine more often is the cause of so many cases being overlooked. That is why recent journals are all at once replete with alleged rare or unique cases, for instance, of pyelitis. I have frequently met with it, and simply because I take the trouble to examine the urine.

Babies are little susceptible to reflex influences until after the sixth or eighth week of their lives. When they have convulsions during the first few weeks of life they mean either accidents to the nervous centers or a scanty development; as soon as five or six weeks have passed the reflex rapidly grows and inhibition is but little marked; this accounts for so many cases of convulsions during the earlier period of life. During the first few years of life these reflexes are greatly developed. I believe this to be the reason why intestinal irritation and toxemia are so dangerous in young children; both may be caused by either constipation or by diarrhea.

DR. FORCHHEIMER.—I have been for many years interested in this subject and have made many investigations in connection with it, especially because there were many men who did not believe in the existence of such a condition as an etiological factor. Dr. William Osler was at one time of this number. I have tried to prove the existence of such a condition. Bouchard, in a beautifully written and very interesting work established certain forms of chronic intoxication, intestinal in origin, and he believed he had shown the urine to be toxic in such cases. In order to prove Bouchard's work and to satisfy myself that his deductions were correct, I made a number of experiments taking the urines from patients of different classes. The story is a long one and has already been published. As a result of my experiments I found that the toxicity of the urine used by Bouchard was due to faulty methods; when proper methods were used none of the urine was found to be toxic. So, to determine this toxicity one must turn to other methods. Soon indican came to the front again and, as a result, this was examined for in all cases in which there was a diagnosis made of chronic intestinal autointoxication. Unfortunately, indican itself does not show very much as far as chronic intestinal intoxication is concerned. In a large number of cases no indican is present in the urine; at all events, finding indican once in the urine means nothing. But if after repeated examinations indican is found, it is presumptive evidence that there is an abnormal condition in the intestines, causing a change in the albumin with an end product of indican. So far as an examination of the blood is concerned in cases of chronic intestinal autointoxication there is nothing positive determined. I have come to the conclusion, though, in the examination of a series of cases that there is a slight increase in the eosinophiles.

I rely more upon the clinical evidences of chronic intestinal intoxication, especially in adults, than upon anything else. In children there is an accumulation of fecal material in certain parts of the intestine, such as the sigmoid flexure, and it will be retained there for some time; this accounts for the constipation and for the diarrhea; when it has not been removed there is constipation; when it remains for any length of time it will produce a diarrhea. In adults the conditions are different. In adults, the deposit of fecal material is at different places and at various curvatures, viz., sigmoid flexure, the hepatic flexure, the splenic flexure and the head of the colon. Sometimes the whole of the large intestine become blocked up.

I have laid stress in diagnosis upon a condition I once described as chronic ulcerative stomatitis which occurs in children quite rarely and in adults very frequently in the form of Rigg's disease. Curiously enough in Rigg's disease I have always found uric acid, and I have come to the conclusion in common with a number of other observers that this is due to autointoxication. This condition in the mouth is not so common in children, but when it does occur it gives very valuable evidence of the existence of this condition in the intestines.

DR. NORTHRUP.—I wonder whether Dr. Rachford can throw any light on the intestinal conditions that occur in children who suffer from pneumonia? Are they due to the eliminations of toxins from the intestine?

DR. RACHFORD.—The significance of indican in the urine, admits of but little difference of opinion. When indican is found in excess in the urine it always means a hyperfermentation in the intestinal canal with the formation of indol and other toxins. It is, therefore, a certain indication of intestinal toxemia, since the indol had to be absorbed from the intestinal canal and passed through the body media before it could be excreted as indican by the kidneys, and since indol is toxic, this process must mean autointoxication.

As previously stated the absence of an excess of indican in the urine does not, however, mean that there is no intestinal intoxication without the formation of an excess of indol, and, therefore, without the appearance of an excess of indican in the urine. The relationship, therefore, of an excess of indican in the urine to intestinal intoxication seems plain. When it occurs it is a valuable sign of intestinal intoxication, but its absence does not preclude the possibility of the existence of such an intoxication.

In reply to Dr. Northrup's question as to the explanation of intestinal intoxications as a complication of pneumonia, I think that this complication depends largely upon the age of the child. In very young children, it matters little what the character of the infection is, intestinal complications are common, but they are not specifically related to any particular infection.

PERCUSSION OF THE SKULL WITH ESPECIAL REFERENCE TO THE OCCURRENCE OF MacEWEN'S SIGN IN MENINGITIS AND CEREBRAL DISEASE OF CHILDREN.*

BY HENRY KOPLIK, M.D.,
New York.

During the past two years I have been particularly interested in percussion of the skull in children suffering from various forms of meningitis. I was led to this train of thought especially by the writings of MacEwen. In his treatise upon the pyogenic infective diseases of the brain and spinal cord, MacEwen discusses the percussion note obtained over a distended lateral ventricle of the brain, speaking especially of the base of the brain and those diseases, such as tumors, in which an increase of fluid in the ventricle caused by an occlusion of the veins of Galen, or otherwise, produces an altered percussion note over the ventricle.

He says:—"When the lateral ventricles are distended with serous fluid, as would be occasioned by cerebral tumors pressing on the fourth ventricle, or by occlusion of the veins of Galen or otherwise, the percussion note is markedly altered, the resonance being greatly increased Beside the increased resonance, there is an important feature which may be demonstrated:—The percussion elicited at a given spot on the cranium, such as the pterion, varies according to the position of the head. While the person sits with the head upright, the most resonant note is brought out by percussion toward the basal level of the frontal bones and the squamous portion of the parietal. If the patient hangs his head to one side, so that one parietal is placed fairly below the other, the greater resonance is found on percussion of the lower parietal. Reverse the position and the same note is elicited on the opposite side of the head, which is now the lower, the greater resonance being found at that part of the skull nearest the lateral ventricles, and which for the time is at the lowest level."

"These observations tend to indicate that the quality of this note is not dependent on the mere density of the diameter of the cranium, but to a large extent upon the consistence or arrangement of the intracranial contents relatively to the osseous walls. . . . The exact mechanical quality of the note is difficult to describe, but when heard, it conveys the idea of hollowness. One such case, in which the above phenomena were clearly marked was observed to a conclusion. The percussion note was not so clear at first as it ultimately became, the resonance increasing as the disease advanced."

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* Read by title before the American Pediatric Society, Detroit, Mich., June 1, 1904.

Taking these remarks as a keynote, I have made observations on every case of meningitis coming under my notice. I have studied, also, the percussion of the cranium in normal infants. MacEwen has studied this note, he says, in over forty children and young adolescents who have had distended ventricles arising from any cause. He says:—"In tumors of the cerebellum it is an aid to diagnosis, and when present with abscess it points to an involvement of the cerebral fossa."

In looking through the literature for notices upon percussion of the head in children, I have found that Betz has studied this phenomenon in normal children. He says that over the cranium, when the bones are thick and formed, there is an empty tympanic note. The percussion is dull over the fontanels where the bones are not formed. There is a sonorous, hollow percussion note where the bones are thin but formed, and a tympanitic note at the back of the skull. He finds a "cracked pot" sound in the normal head, and a parchment-like sound over the large fontanels when the sutures are closed.

These notices of Betz are rather confusing, inasmuch as it is not stated whether the children were recumbent or sitting up when examined. I have tried to simplify a very useful sign of MacEwen as applied to infants and children. MacEwen's sign is the finding by percussion of a tympanitic note over the pterion, the base of the frontal bone and the squamous portion of the parietal bone, that is, over the situation of the horn of the ventricle; but this is not so useful below the age of two years as after this period, when the bones are fully formed and the sutures closed. From the earliest infancy a mild tympanitic note may be obtained either in the recumbent posture or in the position of the head described by MacEwen over the situation indicated, in infants, especially in those who are slightly or markedly rachitic. In some infants in whom the signs of rachitis are very evident, the parietal boss is present to a marked degree and when the fontanels are large this note may be obtained without the least difficulty. I think its presence is due to the cause laid down by MacEwen, an excess of fluid in the ventricles. We know that there is present in many of these cases a very mild degree of serous accumulation in the brain cavities, or hydrocephalus if we might so call it.

In passing from the study of infants to children above the age of two years, the MacEwen sign is especially useful in those forms of cerebral disease, such as tumor of the brain and pachymeningitis, in which there is an accumulation of fluid in the ventricles. In tubercular meningitis I have found the note increased in resonance from the early stages of the disease to that period in which we know that a large accumulation takes place in the ventricle, and upon lumbar puncture I have confirmed to a greater or less extent that there has been not only in the ventricles, but in the subarachnoid space, an accumulation of fluid greater than the normal and present under a considerable degree of pressure.

In cerebral meningitis, and those forms of suppuration in which there is an accumulation of fluid not only in the subarachnoid space, but over the external portion of the brain and cerebellum, the note elicited by percussion is dull; the tympany fails to appear. The failure in these cases to obtain the tympanitic note of MacEwen is due, in my opinion, to the fact that in the suppurative forms of meningitis there is a thin layer of exudate between the dura and the pia mater, thus making the brain substance and the skull cap a continuous medium, as in pleurisy. In fact, one of the most useful differential signs between the tuberculous form of meningitis and the cerebrospinal form (meningococcus) is that, in the tuberculous form of meningitis, this acute accumulation of serous fluid in the ventricles gives us the MacEwen sign, as compared to the rather dull note obtained in other forms of meningitis. I have now under observation an obscure case, in which the MacEwen sign is obtained in all its clearness. The diagnosis of this case at one time was that of cerebral tumor, and this diagnosis was made by a distinguished neurologist.

In conclusion I may say that the MacEwen sign must be accepted with great caution in cases of infants below two years of age. It is one of the most useful signs of fluid in the lateral ventricles of the brain in various forms of meningitis, especially of the tuberculous type, and in tumors at the base of the brain. I have had occasion in 1 case of cerebral abscess, due to otitis and mastoid disease, occurring in a boy six years of age, to find this sign quite marked, so that I can agree with MacEwen as to its value in children as well as adults. It is to be emphasized that in seeking this sign the patient must assume the sitting posture as MacEwen directs; otherwise error is inevitable.

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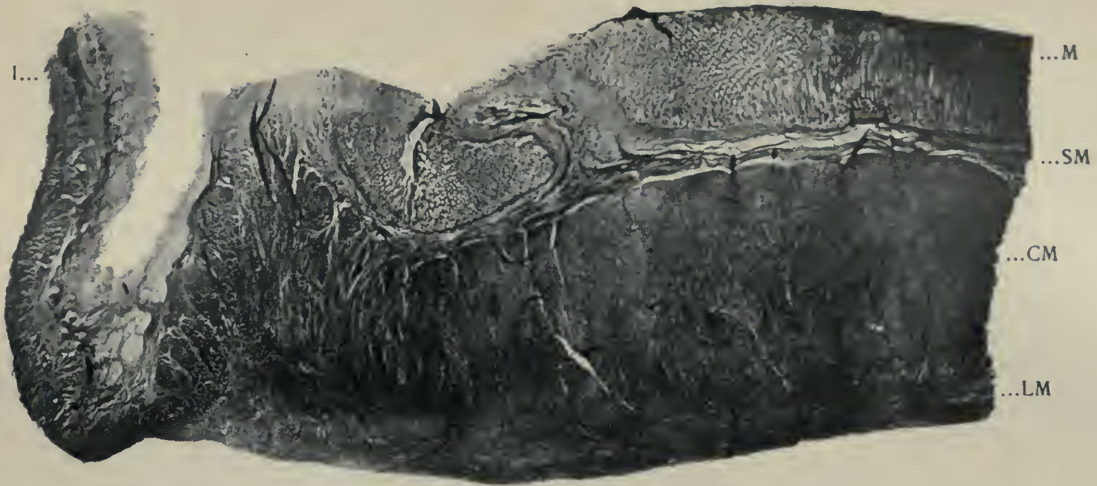

LONGITUDINAL SECTION OF PYLORUS FROM CASE OF CONGENITAL HYPERTROPHIC STENOSIS OF PYLORUS.

M mucous membrane; SM submucous tissue; CM circular muscular coat; LM longitudinal muscular coat; I intestinal wall; 8 diam.

CONGENITAL HYPERTROPHIC STENOSIS OF THE PYLORUS IN AN INFANT, WITH REPORT OF A CASE.*

BY JOHN DORNING, M.D.,

New York.

On May 24, 1903, I saw, with Dr. Haring, of Tenafly, N. J., Baby H., *aet.* two months, whose history, obtained from the mother, is as follows:

The baby was born March 23, 1903, after a natural labor, of healthy parents, and is the fourth child, the remaining three being alive and healthy. Apparently healthy at birth and weighed eight and one-half pounds. Diet exclusively breast milk; but has, since birth, always vomited after nursing. The mother says the vomiting was excessive, very much more than with her other children. Sometimes she would nurse him three times in succession before she could lay him down without his vomiting the whole nursing. She never noticed mucus in the vomited material. The milk always returned fluid. The baby seemed to be able to retain water. The mother tried to nurse him every two hours but he would often sleep three to four hours between nursing. Frequently he would sleep from 6 P.M. to 6 A.M., and he was never awake more than once during the night. He seemed to be always sleepy.

He never cried, but would fret after vomiting until he nursed again. Bowels moved several times a day, always yellow in color and digested. On one or two occasions the stools were slightly green, but the yellow color returned after the administration of a teaspoonful of olive oil. The baby grew long, the face was plump and body not thin, but the legs and arms were always very emaciated. The abdomen was flat after long abstinence from food, but showed much distension after nursing.

On May 6th, when six weeks old, he vomited excessively, bringing up curds and mucus. The bowels became constipated and the urine scanty. After a few days he voided no urine at all for forty-eight hours, and the bowels did not move for several days. At this time a physician was called who prescribed salol for "infantile grippe," also hot baths two or three times a day. Baby seemed to improve for a few days—kidneys and bowels both resuming their functions. On May 19th, had high fever; was some better next day, but continued to vomit and lose flesh; there was now mucus in the vomited matter.

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* Read before the Sixteenth Annual Meeting of the American Pediatric Society, Detroit, Mich., May 30, 1904.

I found a pale, extremely emaciated, very weak and listless infant. The abdomen was generally somewhat distended, but soft, tympanitic, and not tender on pressure. On palpation I felt a small mass in the epigastric region, about as large as a medium sized olive, just to the right of the median line. Examination of the chest was negative. Urine negative. Tongue was clean. I diagnosticated hypertrophic stenosis of the pylorus and gastric catarrh. Because of the low vitality of the baby operation was not entertained. I advised gastric lavage and, temporarily, nutrient enemata. I did not see the baby again until June 8th, when I performed an autopsy.

The nurse's and mother's record for the intervening period, states that until June 7th, when the child died, "the stomach had been washed out once or twice a day, bringing up milk and mucus each time; that he was nursed from four to eight times a day, not more than ten minutes at a time, and vomited from two to eight times a day. The vomited matter would usually consist of fluid milk, but sometimes it was curdled and mixed with mucus. For two days it was sour, at which time barley gruel and cream had been substituted for the breast milk. Nutrient enemata were occasionally given. The bowels were variable but there was no diarrhea. Medication consisted of the occasional administration of small doses of calomel, bismuth now and then and small quantities of brandy at varying intervals. On the night of June 5th, the abdomen became much swollen and the baby very fretful. Irrigation of the bowels relieved the distension and afforded great relief. At 2 P.M., June 7th, the baby became unconscious while nursing and died two hours later," at the age of two and a half months.

Autopsy June 8th, 4 P.M. Body extremely emaciated. Rigor mortis not marked. Liver, spleen and kidneys showed nothing abnormal. Stomach distended. Pylorus much thickened and hard. Duodenum, one inch beyond pylorus, deeply congested over an area of an inch-and-a-half, resembling a gut that had recently been released from strangulation. The stomach contained about two ounces of milk; a large amount of thick and very tenacious mucus adhered to the mucous membrane and extended into the pylorus, blocking up its lumen. The mucous membrane of the stomach was pale and showed no ulceration. The wall of the stomach presented a decided thickening toward the pyloric extremity. The pylorus itself showed a pronounced thickening of its walls and a narrowing of its lumen, permitting the passage of a probe 2 mm. in diameter. Its lining membrane was thrown into longitudinal folds. The mucous membrane at the seat of the apparent strangulation was very deeply congested.

Report of examination, made by Dr. John H. Larkin, of the Pathological Laboratory of Columbia University: "The specimen for examination consists of stomach of infant with intestines attached. It is moderately enlarged; consistence is very firm; and examination of its mucous membrane shows partial loss of normal corrugations, the mucous membrane being smooth and without evident signs of ulceration. The fundus and pyloric portion show marked thickening. This portion is funnel shaped, the walls are markedly hypertrophied and the lumen of pylorus markedly stenosed. The duodenal end of the pylorus projects into the duodenum and gives one the appearance of the cervix uteri projecting into the vagina.

"The stomach measures from the fundus to the pylorus along its greater curvature, 8 cm. and from the small curvature to the greater curvature, at its greater diameter, 5 cm. On longitudinal section of the pylorus along the greater curvature, the pylorus measures from its tip in the duodenum to that part where the pylorus suddenly ends and joins the general stomach wall, 3 cm. The thickness of the pylorus behind the gastroduodenal valve is 5 mm. Passing backward at a point 5 cm. from the duodenal tip the stomach wall measures 3 mm. From this point the stomach wall gradually thins out till we come to a point at the greatest diameter of the stomach along the larger curvature where the stomach wall measures 2 mm.

"The mucous membrane at pylorus is markedly thickened and folded longitudinally. There are no evidences of ulceration of the mucosa.

"*Microscopical Examination.*—Portions were taken as follows: (1) A longitudinal section of thickened pylorus including part of the duodenum, 2 cm. (2) A cross section of pylorus. (3) A cross section at fundus. (4) A section at greater curvature near the anterior surface.

"The microscopical picture is one of a diffuse fibrous thickening of the submucosa and an extensive hyperplasia of the circular muscular fibers at this point. The longitudinal muscular fibers also show moderate thickening. The submucous tissue forms a very dense fibrous tissue which is devoid of cells and shows but few blood vessels. The circular muscular fibers are arranged in bundles and separated by dense fibrous tissue strands which are continuous with those of the submucosa.

"The sections at the fundus show essentially the same picture of thickened submucosa but in less degree the thickening of the circular fibers.

"Examination of the mucous membrane at pylorus shows the glandular elements intact and normal. The mucous membrane of the duodenum was bile stained and its glands were necrotic, otherwise there is no pathological change in this part of the specimen. The mucous membrane at fundus and at greater curvature shows loss of its glandular arrangement. The cells have desquamated so that the picture is one of a great many larger and smaller cells aggregated together, in place of well defined glands.

"The anatomical diagnosis is, therefore, Stenosis of pylorus from fibrous thickening of the submucosa and hyperplasia of the circular muscular coat."

In recording this case of congenital hypertrophic stenosis of the pylorus, there is added to the rapidly increasing list another unmistakable instance of this affection, the diagnosis of which was verified by autopsy.

The first recorded case, that we know of, was by Williamson,[1] in 1841. In 1842 Davorski[2] reported a second case. There is then no further mention of this malady until 1888, when Hirschsprung reports 2 cases. There are now on record about 60 cases in all. The affection, therefore, while not common, cannot be said to be rare. It is a remarkable fact that most observers after having seen a single case and thus had their attention directed to the affection have subsequently come across one or more additional ones.

A study of the literature of this affection would lead one to infer that there are either two distinct pathological conditions with similar clinical manifestations, one of which is amenable to dietetic management and the other, unless relieved by surgical operation, progresses to a fatal termination; or, that there are simply varying grades, or perhaps different phases of one and the same pyloric lesion. The published pathological findings could, thus far, be interpreted to favor either view. In nearly every reported case, in which an autopsy was obtained, hypertrophy of the circular muscular coat is noted, while in most of them there is also hyperplasia of the submucosa and in a few some thickening of the mucosa. The pathological condition in the reported cases of recovery can, of course, only be conjectured.

The pathogenesis of this affection is still a matter of speculation. It is generally conceded that it originates during intrauterine life. Thomson's[17] theory that it is "a functional disorder of the nerves of the stomach and pylorus," causing spasm and secondary hypertrophy of the pyloric structures is not altogether satisfactory, in that while it may, in a measure, account for the muscular hypertrophy, it does not explain the increase in the submucous connective tissue, present in so many of these cases.

The condition is also thought to be simply a prenatal overdevelopment of the pyloric structures, or, in other words, an embryological malformation with probably secondary spasm of the muscular coat. It must be confessed that, at present, we know very little about its pathogenesis or etiology. The possible existence of a syphilitic element in this condition should not be forgotten, even though the immediate history be negative.

The diagnostic symptoms of hypertrophic stenosis of the pylorus are persistent, and apparently causeless, vomiting, progressive wasting and a palpable pylorus. The vomiting is usually unaccompanied by nausea; it may, or may not, be forcible in character and may follow each feeding or may occur after every third, fourth or fifth feeding, in which case, the quantity is generally large. All the food ingested is not necessarily regurgitated, for some of it undoubtedly passes through the pylorus even though its lumen be exceedingly small. The vomited material may be in a fluid state or curdled; it is sometimes mixed with mucus and may show a normal, diminished or absent acidity according to the absence or presence of a complicating involvement of the gastric mucous membrane and dilatation.

The absence of bile in the vomitus would ordinarily indicate the obstruction to be above the entrance of the common bile duct into the intestine. Its presence, however, would not exclude pyloric stenosis, for Schwyzer[16] and Saunders[40] each report a case in which bile was mixed with the vomited matter and caused some uncertainty in diagnosis. In cases of moderate stenosis in which, perhaps, muscular spasm is a prominent factor, the gastric symptoms, though sometimes rather pronounced, are generally not very urgent in character, and improve and even seem to entirely subside under dietetic treatment.

It is unnecessary to remark that the wasting is due to insufficient nutrition. It would not be unreasonable to believe that many cases of socalled marasmus or infantile vomiting are really instances of pyloric stenosis.

The presence of a palpable tumor in the region of the pylorus, in conjunction with the previously mentioned symptoms, would establish the diagnosis beyond a reasonable doubt. As it is not always possible to detect, with the palpating fingers, small masses in the upper abdominal zone, its absence would not altogether negative the diagnosis. Where the patient's condition would warrant it, an examination under anesthesia might disclose the presence of a thickened pylorus where it could not otherwise be detected.

The vomiting of abnormally large quantities of food, and a fulness in the epigastric and upper umbilical regions, with perhaps the demonstration of a peristaltic wave, would indicate a complicating dilatation of the stomach.

The tongue is frequently clean and the breath free from odor, unless fermentation be present. There is constipation in many cases. The symptoms, then, of congenital pyloric stenosis are practically those of pyloric obstruction, and other lesions, such as atresia, polypi and adjacent neoplasms or cicatricial tissue occluding the duodenal extremity of the stomach are so rare in infancy that when symptoms of persistent pyloric obstruction are in evidence this condition should at least be strongly suspected if not, with good reason, be considered to actually exist.

Every case is not necessarily immediately fatal. The blocking up of the lumen of the pylorus by thick tough mucus, as was observed in the subject of this report, may precipitate a fatal termination in a case that, otherwise, might continue on indefinitely. A small number of cases, in some of which the diagnosis may, perhaps, be questioned, with fairly well marked symptoms, are reported to have yielded to dietetic treatment and a few have apparently recovered after operation. Some of these patients undoubtedly live to an advanced age, all the while suffering more or less with dyspeptic symptoms. There are thirty-one autopsies published by Maier in which stenosis of the pylorus was found. The two youngest of these subjects were twelve and sixteen years respectively, the oldest was eighty, and the ages of the others ranged between twenty and forty years. In some of the cases the clinical history dated back to childhood. There being no evidence of any pathological process likely to cause the lesion the cases were considered congenital. Landerer reports a case of marasmus in a man forty-five years of age, who had from infancy suffered from dyspeptic symptoms. The autopsy revealed a greatly dilated stomach with a pylorus having a lumen of only 2 mm. in diameter, but no hypertrophy of its walls. For about fourteen years I have had under observation a patient, now in his seventeenth year, who has been vomiting since he was three months old. At such times as his diet can be restricted to fluid nutriment, not including milk, there is an improvement in his general condition. At present he weighs but fifty-seven pounds and measures fifty-one and a half inches in height. He is thin and under-developed.

It is impossible with our present knowledge to predict with any degree of certainty what the future of these cases will be, whether operated on, or not. We know very little of the after history of gastro-intestinal operations in early life. Nicoll[30] mentions a case in which pylorplasty was performed and the child eight months later was alive and thriving. Instances are published of recontraction of the pylorus after the operation of dilatation, and of occlusion of the new opening made by gastroenterostomy. I have in mind an unpublished autopsy in a very young infant performed several weeks after a gastroenterostomy in which the gastric mucosa, but not that of the intestine, was found to be so contracted as to permit the passage of only a very fine probe.

Nevertheless, in cases that are intractable to dietetic treatment operation alone offers any promise of relief and it should not be too long delayed.

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DISCUSSION.

DR. NORTHRUP.—I should like in general to encourage a healthy scepticism in the Society regarding such reports. Of course this case has been carefully studied. In the next few years there will be an epidemic of such cases as a result of a few cases reported. Many of them will be mistaken observations.

DR. WEST.—In looking up the subject before reporting my case to the Society last year I found only 4 recorded cases of true hypertrophic stenosis of the pylorus. The distinction is made by but few writers between cases of congenital gastric spasm, with hypertrophy of the circular muscular layer, and cases of true stenosis in which there is hyperplasia of the epithelium, increase of connective tissue in the submucosa and of fibrous tissue in the muscular coat, with hypertrophy of both muscular layers. An illustration of this is found in an article published in the ARCHIVES OF PEDIATRICS some time since in which a case of each kind is reported.

That the spasm of the sphincter has considerable to do with the termination of the trouble, even in the latter cases, is shown by the fact that, postmortem, the pylorus permits the passage of a good-sized probe.

With regard to Dr. Dorning's statement that the first case of this kind was reported in 1841, attention ought to be called to the case published by Dr. Hezekiah Beardsley, in 1788, and republished by Dr. Osler in the ARCHIVES OF PEDIATRICS for May, 1903. While no microscopical examination was made of the case it appears to be a true hypertrophic stenosis of the pylorus in a boy six years old, who had been sick since birth.

DR. MORSE.—A year ago I occupied somewhat the same position as Dr. Northrup in his scepticism when such cases were reported. During the past year, however, I have seen 2 cases in which the symptoms corresponded accurately to the descriptions given of those of hypertrophy and stenosis of the pylorus. They were fed on all sorts of food, including breast milk. There was obstinate constipation and progressive loss of weight. In 1 case there was a palpable tumor and visible peristalsis. Both infants were operated on. In both cases an enlarged mass was found at the pylorus. Gastroenterostomy was performed in each case, and death resulted in both cases, in one after thirty-six hours, in the other after a number of days. No autopsy or microscopical examination was made in either case.

DR. HOLT.—It would be a pity to allow the impression to prevail from this discussion that any doubt existed regarding the occurrence of this condition. I have recently seen 2 cases which presented many of the features of the case reported by Dr. Dorning. One child was six weeks old and began to vomit at the age of two weeks. It would take food in the morning and retain it, and again at eleven, at two and at five o'clock food was retained, until about six o'clock each afternoon when almost the entire food taken for the day would be vomited. In this infant the stomach was dilated to the size of 8 ounces. The case was a perfectly typical one. The child was operated upon, but unsuccessfully, and the microscopical examination confirmed the diagnosis. Another case seen in hospital practice this year gave a similar clinical picture and the same results from a microscopical examination. I do not believe cases of hypertrophic stenosis of the pylorus are common, but they certainly are not so very rare.

DR. ROTCH.—I have seen a case which presented the symptoms described of pyloric stenosis, but the autopsy showed nothing of the kind; instead, there was a dilatation of the cardiac end of the esophagus. The symptoms presented were very similar to those of stenosis of the pylorus.

DR. CAILLÉ.—I think that the greatest interest in these cases of stenosis of the pylorus is centered in the diagnosis. The clinical picture of obstruction at the pylorus is occasionally seen. In the absence of palpable tumor this condition is one in which it is most difficult to make a correct diagnosis. The diagnostic features are still to be studied.

DR. DORNING.—I was somewhat sceptical regarding some of the reported cases of congenital hypertrophic pyloric stenosis. I think the specimen presented will speak for itself, as it shows a great disproportion between the muscular and mucous coats, and the development of fibrous tissue in the submucosa. I agree with Dr. Caillé that it is almost impossible to make an exact diagnosis in the absence of a palpable tumor; if a tumor cannot be made out the diagnosis must still remain in doubt.

Clinical Memoranda.

A CASE OF CUBITUS VARUS, SHOWING DEFORMITY OF LATERAL CURVATURE OF THE SPINE, CORRECTED BY OSTEOTOMY.*

BY FRANK E. PECKHAM, M.D.,
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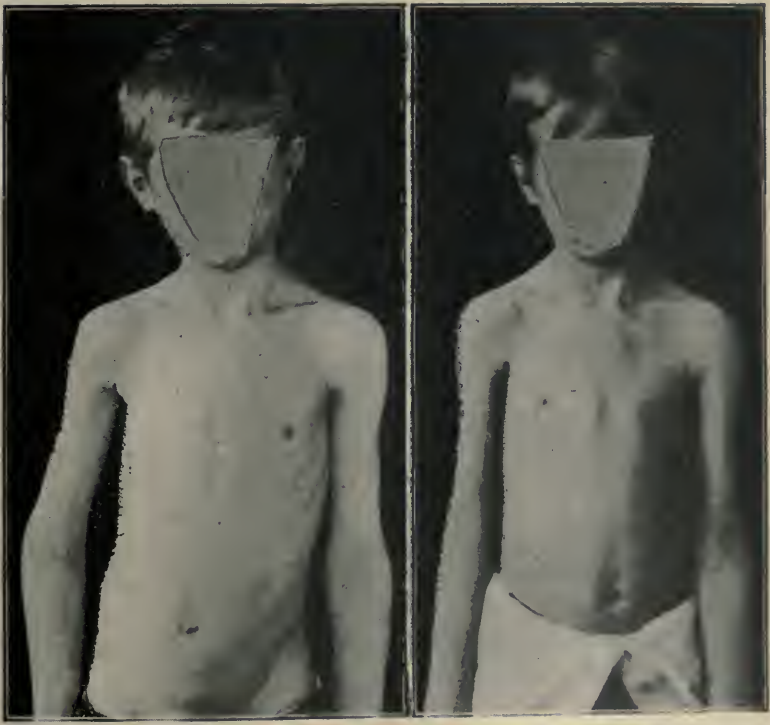
At the meeting of the American Orthopedic Association held in Washington, May, 1903, cases of this deformity were reported by Dr. Hoffman, of St. Louis. In the discussion which followed it was brought out that a possible danger of allowing such de-



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* Read before the Annual Meeting of the American Orthopedic Association, June, 1904.

formity to remain uncorrected was that a lateral curvature of the spine might develop. To illustrate this condition I wish to report the following case.

A. D., aged nine years, suffered a fracture about the elbow joint, August, 1902. It was put up in acute flexion and union resulted with the deformity as shown in photograph.

November 30, 1902, osteotomy was done just above condyles of humerus. The carrying angle of the elbow was restored and the whole arm put up in plaster of Paris.

December 19, 1902, the plaster was cut down, the posterior half being used as a splint until December 31. The photograph shows the inability of the boy to stand straight, while the deformity existed; while the final result is also shown with the deformity corrected and the boy standing perfectly straight.

Tuberculosis in Children. — On November 6, 1902, Clifford Allbutt, in the course of an address on tuberculosis at Glasgow, referring to tuberculosis in childhood, said: "An opinion has been held by physicians at home and abroad, physicians of the highest authority, that in most cases, perhaps in all, it is during childhood that tubercle establishes itself in the human frame. This opinion I would not propose to you too confidently; yet, as a broad and effective aphorism, I believe it to be not unveracious, and if this be so, it points to a still more jealous care of our children. The passage of tubercle from parents to child is so rare as to be negligible; the disease is usually incurred during the years in which the child inhabits the floor, and inhales its dust. Again, the fungus may be taken in with the food, or by licking pencils and slates, by sucking dirty finger-nails, and so forth." Although he had little hope of entirely preventing tuberculosis in childhood, at any rate for some time to come, the speaker thought that when the fact is taken into consideration that inoculation of it in early life may often be the origin and source of an outbreak many years later, no work can be more important than the provision of sanatoriums for delicate children. He suggests that large cities should erect by the seashore a group of cheap dwellings on the "cottage" system, to which should be sent children of consumptive tendencies.—*Medical Record.*

UREMIA SIMULATING BRAIN HEMORRHAGE.

BY WALTER G. ELMER, B.S., M.D.,

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Philadelphia.

The following case is presented as an example of the difficulty which may occasionally arise in making a differential diagnosis between two conditions in which the symptoms presented may be almost identical, and yet the actual conditions themselves be absolutely different.

The patient, Walter G., was a child five years of age. He left his home in the morning apparently in perfect health and while passing a neighboring house was seen to run directly into a tree striking his head against the trunk with considerable force. He did not fall, and the persons running to his assistance found him dazed and uncertain as to his surroundings—yet he was able to walk back to his own home a short distance away. His mother came out to find him holding on to the railing of the porch steps and vomiting. He apparently did not recognize her, responded to no questions and quickly became unconscious. He was taken to the Presbyterian Hospital. The writer happened to be in the ward at the time the child was admitted and went directly to his bedside.

Physical examination revealed the following points:—the child was absolutely comatose, the face very pale, the lips cyanotic, the pupils dilated, the right very markedly so, and inactive to light. The pulse was small and rapid, 144. The breathing was very shallow, irregular, long pauses and apparently of the Cheyne-Stokes' type. The right arm and leg were rigid and could only be flexed with considerable difficulty, while normal muscle tonus was present on the left side. Convulsive seizures were frequent, occurring every two or three minutes and all the muscles of expression of the right side of the face were thrown into convulsive twitching. A careful examination of the surface of the head and body showed no external sign of injury whatever, and yet the symptoms pointed so strongly to extravasation along the left anterior central convolution that it seemed highly probable that the child had struck his head accidentally against the tree-trunk with sufficient violence to severely jar the brain substance and tear a vessel; and it was not unreasonable to suppose that a cloth cap could afford sufficient protection to the scalp to prevent the signs of external injury.

With the idea of excluding the possibility of uremia, a catheter was sent for, and while waiting for this to be sterilized, the child's breathing became so shallow and infrequent that a fatal termination seemed inevitable. Then, suddenly, the right side of the body relaxed and the spastic rigidity was at once present in the left arm and leg and the convulsive twitchings were present on the left side of the face. The muscles of the right side returned to their normal tone. This quick change in the symptoms practically cleared up the diagnosis. The bladder contained about one ounce of urine, of very high specific gravity, a large quantity of albumin, and numerous blood casts, epithelial and pale granular casts and free blood cells.

The condition, therefore, was one of acute nephritis, probably brought on from lying on damp ground, for there was nothing in the child's history to indicate a previous attack of renal disease. This acute congestion had no doubt developed rapidly, in a few days' time, and the child suddenly became dizzy and ran against the tree in consequence. All of the subsequent symptoms were due to the uremic condition and the head-injury probably played no part whatever.

It can be readily understood how misleading the symptoms may be under the circumstances, for the child when first seen presented all of the symptoms, with the single exception of conjugate deviation, of a left-sided effusion along the anterior central convolution, and these symptoms had developed gradually after a head injury, about a half hour having elapsed up to the time of admission to the hospital.

The usual means were adopted to rapidly eliminate the poison, and shortly after the beginning of the hot-packs the child returned to consciousness and was able to drink water freely. The kidneys promptly regained their activity; and when the writer entered the ward the next morning the child sat up in bed and asked if he might go home.

The renal condition cleared up rapidly, and when the child was discharged from the hospital well, no trace of albumin or casts could be found in the urine.

A CASE OF ICTERUS NEONATORUM WITH PURPURA AND PERSISTENT HEMORRHAGE FROM A BLOOD-LANCET WOUND.*

BY J. E. TALLEY, M.D.,
Philadelphia, Pa.

The parents of the child are in the third decade and perfectly healthy. There is nothing of interest in the family history, except a strong predisposition to tuberculosis on the father's side. The mother has borne five children in a little less than six years. The first three are perfectly healthy, though the second had a marked icterus during the first few weeks of life. The fourth child, born July 30, 1902, was a shoulder-presentation; but the mother's pelvis is roomy, and Dr. Girvin easily delivered her by version. The infant developed an intense icterus, and died about the third day, with an apparent obstructive jaundice.

The fifth child, my patient, was delivered at term, September 15, 1903, without difficulty. It at once became jaundiced, and within a few days the color was intense. All the stools observed were dark-colored, and the napkins were deeply stained with the bilious urine. The cord did not separate until the eighth day; but there was no external evidence of infection, and the child had no fever at any time. On the tenth day, purpuric spots on the knees and face were first noted. These gradually appeared on both arms and legs and on the body; and the back of the left hand became one large, dark, puffed up extravasation. The only visible patch on the mucous membranes was a large one involving the hard and the soft palate. There appeared on the body about twenty-five patches in all, varying in size from that of a half-dollar, on the hands, down to that of a split pea. Some were flat; but more were rounded, elevated, and hard, where the blood coagulated beneath the skin. About the middle of October, when the child was a month old, since the spots continued to appear, in spite of treatment, and the jaundice disappeared but slowly, Dr. Griffith saw the patient with me. We determined to risk a blood-examination and, if possible, to examine the blood for bacteria. Dr. C. Y. White made the count, a day or so later, and fortunately decided against trying to secure enough blood to make a bacterial examination.

A small puncture was made, with an ordinary blood-lancet, in the left great toe. An application of alcohol and cotton with collodion failed quite to check the oozing. Later in the evening, having failed to check the flow with 1:1,000 adrenalin compresses, we decided to put a rubber band lightly around the toe for a few hours. This entirely checked the bleeding, but was not removed at the time designated. The following morning, the toe was swollen and congested, but slowly resumed its natural color when the band had been removed. By the night of the same day, there had developed an annular vesicle all around the toe, just where the rubber band had been. The serum continually increased in this blister, and the tension became so great that the toe was even more swollen and congested than it had been by the constriction of the band. So great was this pressure that, when the blister was punctured with a needle, the serum spurted upward, it seemed, a foot. The constriction having been relieved, the toe became more nearly normal in color, but the previous lancet-puncture began to ooze again. The vesicle also filled up again, but this time with not only serum, but with blood itself, which in a few hours coagulated, making a hard, dark ring around the toe. Then the needle and the lancet-puncture appeared to vie with each other in rapidity of oozing. The dressings were saturated every two or three hours, in spite of all sorts of local and internal medication. The toe also appeared to become the seat of a mild infection, as it became very red and threatened to suppurate, although it did not do so.

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* Read before the Philadelphia Pediatric Society, June 14, 1904.

Among the remedies used locally were cold adrenalin (1:5,000; and finally, 1:1,000); tannic acid; alum; gelatin; and finally, Monsell's solution, which was the only thing that had any effect. Even this was only for a time, as the oozing would begin again at some part of the vesicle, the lancet-wound having stopped at about the end of the fourth day. Internally, the child took, first, suprarenal extract, half a grain every two hours; and, later, adrenalin-solution, 1:1,000, one drop every two hours, without any immediate effect upon the hemorrhage. To this was added half an ounce of gelatin-solution (1 dram to 1 pint) every three hours, but still without the desired result. Later, calcium chlorid, half a grain every two hours, was given; and in less than forty-eight hours the oozing stopped, after having persisted, in all, for a week.

A day or so later, the vesicle, with its contained clot and the toe-nail, came away with the dressing; but the hemorrhage did not return, although the new surface thus exposed afforded every inducement. The calcium chlorid had been stopped after the fourth day of its administration, as the therapeutists tell us that, administered longer, it tends to decrease, instead of to increase, the coagulability of the blood.

The suprarenal extract, in half-grain doses every two hours, was continued in the hope of controlling the development of the petetchiæ, which it appeared to do; for on October 28, 1903, I have noted that no new spots were developing and the old ones were fading. The jaundice at this time was also much better, the scleræ being almost clear. The suprarenal extract, in half-grain doses, was continued, at four and six hours intervals, for three days longer; and was then discontinued.

On November 5, 1903, the notes showed that the child had taken no medicine for five days; and that the spots had disappeared, with the exception of five—two just below the left knee, two on the left forearm, and one on the left hand; all of which were still dark and hard from the coagulated blood beneath the skin. The stools at this time were a canary-yellow. The toe was practically well, but was larger and harder than the other great toe. The child appeared to be gaining, and five drops of peptonized iron and manganese three times a day was ordered.

On November 12th, the spots were the same as before. The toe was still red and hard, and had a dense scab around it. The jaundice had entirely disappeared. On the 27th, the baby weighed eight pounds and was growing rapidly. The spots had entirely disappeared, except the two on the forearm, which persisted for two weeks longer. The toe was still hard, and had at the site of the vesicle a hard, callous ring around it.

The report of the blood-examination made October 18, 1903, by Dr. C. Y. White, is as follows: Hemoglobin, 28 per cent.; erythrocytes, 2,420,000; leukocytes, 18,240.

Differential count of the leukocytes:

Polymorphonuclear, - -	38.4	per cent.
Mononuclear, - - - -	3.1	" "
Transitional, - - - -	12.45	" "
Lymphocytes, - - - -	41.7	" "
Eosinophiles, - - - -	4.4	" "

Erythrocytes.—Nucleated erythrocytes (normoblasts) were present in low number. Polychromatophilic and basic granulated cells were present; the former were more numerous than the latter. The majority of the cells were pale, and showed a deficiency in hemoglobin. Poikilocytosis and anisocytosis were not marked. No parasites were observed.

The examination of the urine made October 18, 1903, showed it to be clear, alkaline, not enough to tell the specific gravity, no albumin, no sugar, no blood, no hemoglobin, no bile. Microscopical examination showed a few uric-acid crystals.

The case is interesting from many standpoints. The second child in early infancy had an intense jaundice and recovered. The fourth child had died, on the fourth day, of apparently an obstructive jaundice. The cause of the jaundice in the present case is obscure; although, no doubt, the purpura was toxic, and dependent upon the jaundice. The difficulty in checking the oozing would make one chary of attempting blood-examinations in purpuric conditions, especially in children. Monsell's solution locally, and calcium chlorid internally, appeared to have the best effect upon the bleeding, although the calcium chlorid had the advantage of having followed the administration of adrenalin and gelatin. The suprarenal extract appeared to check best the development of new petechiæ.

Sodium Chlorid in the Treatment of Scrofula -- Liégeois (*Jour. des Practiciens,* Vol. XVII., 1903, p. 163) recommends sodium chlorid in the treatment of scrofula. It stimulates the appetite, the salivary and gastric secretions and perhaps the biliary and pancreatic secretions; it increases assimilation and the combustion of albuminoid materials; according to L. Coze, it opposes the loss of phosphates from the organism; it accelerates the phenomena of endosmosis and exosmosis in the course of the lymphatic vessels; it increases the number of blood corpuscles and the quantity of hemoglobin—in fact, it assists in building up the entire organism. L. Coze combines sodium chlorid with calcium carbonate and phosphate, as follows:—

Sodium chlorid	0.1 gram ($1\frac{1}{2}$ grains)
Calcium phosphate	0.20 gram (3 grains)
Calcium carbonate	0.01 gram ($\frac{1}{6}$ grain)

For one paper. One four times a day at mealtime for fifteen days.

Patients suffering from scrofulosis and treated by this means should receive abundant fatty and nitrogenous food.—*American Medicine.*

ARCHIVES OF PEDIATRICS.

SEPTEMBER, 1904.

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HEMORRHAGIC DISEASE OF THE NEWLYBORN.

Excluding cases of traumatic hemorrhage, and those in which the "constitutional fault" of hemophilia can be proven to be present, there remain, under the head of hemorrhagic disease of the newlyborn, the cases of multiple hemorrhages into the skin and viscera occurring as morbus maculosus neonatorum, epidemic hemoglobinuria or Winckel's disease, acute fatty degeneration or Buhl's disease, and syphilis hemorrhagica neonatorum. While much further study is required in order to determine the exact nature of the underlying condition and its direct etiological factor in these cases, as well as the interdependence of the various forms in which the disease manifests itself, our present knowledge of its symptoms, clinical course and pathological anatomy tend very strongly to prove that the process is one of infection, and that morbus maculosus, Winckel's disease and Buhl's disease represent different varieties of the same disease; the difference being one of degree, and varying with the previous condition of the child (as to prematurity, asphyxia, etc.) and the severity of the infection. Cases are far more common in institutions than they are in private practice.

Attempts to find a specific microorganism in these cases have hitherto been unsuccessful. The following bacteria have been cultivated from the heart's blood and viscera after death: staphylococcus pyogenes albus, staphylococcus pyogenes aureus, streptococcus pyogenes, a diplococcus resembling the diplococcus pneumoniæ, bacillus pyocyaneus, bacillus hemorrhagicus of Kolb, bacillus enteritidis of Gaertner, bacillus coli communis and bacilli resembling that organism. The difficult technique of making blood cultures during life in young infants proves a grave and frequent obstacle to the complete and satisfactory study of this disease. Nevertheless such cultures have been successfully made by several observers, with results similar to those obtained at autopsy. As enumerated above, the bacteria almost invariably found have been the pyogenic cocci and the colon bacilli. Morphological study of the blood has not thrown any light upon the subject.

The source of infection and its point of entrance remain obscure in some cases, but in the larger number they are demonstrable. That hemorrhages do not occur in every case of sepsis in the newlyborn child is no argument against the possibility of their occurrence in some cases of greater severity or increased vulnerability on the part of the child. The mouth, the gastroenteric tract and the umbilicus are the main points of entrance for the infection. The umbilicus does not necessarily show any inflammatory lesion as a result. Pus may be found, however, in one or both hypogastric vessels within the abdominal cavity when the umbilicus has the appearance of being normal. So that, without a detailed anatomical study of each individual case at autopsy, even antemortem blood cultures may, if negative, be insufficient to justify a positive opinion as to the presence or absence of pyogenic infection.

The question of the significance of syphilis in these cases is of great interest. Until the cause of syphilis is positively established, it will be impossible to deny that the syphilitic poison alone may be the cause of hemorrhages into the skin and viscera, without the addition of a secondary sepsis. Bacteriological studies of cases of hemorrhagic disease, in which syphilis was undoubtedly present, tend to give results similar to those obtained in cases without syphilitic taint. That a syphilitic infant may present more points of entrance for a secondary or even a terminal infection is plain. The question must, for the present, remain an open one.

Whatever may prove to be the specific or nonspecific etiological factor in these hemorrhagic conditions, it would seem that one of its modes of action is a destructive one on the blood vessel walls. An interesting suggestion in this connection comes from the work of Flexner and Noguchi, who have found, in rattle-snake venom, a substance they designate as hemorrhagin, and which proves to be a cytolysin for endothelial cells of blood vessels, thus causing hemorrhage by a solution of the lining cells of the vessels. Histological studies have borne out this fact. That other poisons, and the pyogenic bacteria as well, may be proven to produce a similar toxic body is probable. It is along these lines of modern pathology that enlightenment on the subject of the hemorrhagic disease of the newlyborn is to be looked for, heredity, and the conditions influencing the child during and immediately after birth, being given due consideration. MARTHA WOLLSTEIN.

Aristochin in Pertussis. — The new quinin preparation, aristochin, has been successfully employed by H. Kittel (*Therap. Monatsch.*, August, 1903), in 34 cases of pertussis. The duration of the disease was materially shortened, especially in children under one year, and early cases were almost aborted. Digestion is never disturbed, and the entire system seems to be toned up. Children under one year receive three times a day as many centigrams as they are months old up to one decigram; older children three times a day two decigrams.—*Medical News.*

Society Reports.

THE NEW YORK ACADEMY OF MEDICINE—SECTION ON PEDIATRICS.

Stated Meeting, May 12, 1904.

DR. MATTHIAS NICOLL, JR., ACTING CHAIRMAN.

DEMONSTRATION OF A PASTEURIZER, STERILIZER AND INFANT'S NURSING BOTTLE-HOLDER.

DR. THERON W. KILMER, after stating the dangers of improperly prepared bottles and milk, presented an apparatus which, in his hands, had proven effective and which consisted of a pail and bottle holder. Two bottle holders were provided, one for ten six-ounce bottles and another for seven eight-ounce bottles, each fitted in the same rack in the pail.

To sterilize the bottles, the bottle holder and bottles were placed in the rack, the pail partly filled with water, the cover put on and the water boiled. When the operation was completed, instead of touching the bottles with the dirty hands or a dirty towel, one simply took the pail to the sink, turned the pail upside down and allowed the bottles to drain dry. To sterilize milk, the bottles should be filled and placed in the holder and in the pail; then the pail should be partly filled with water and placed on the stove and the water boiled for a certain length of time and then gradually cooled and placed on ice. To pasteurize the milk, the pasteurizing temperature being from 158 to 165°, the cold bottle containing milk at 50° is plunged into boiling water at 212°. If the bottles have been previously boiled they become so annealed that breaking of bottles by suddenly thrusting them in boiling water did not occur. In traveling with a bottle-fed baby, the apparatus presented was very convenient; for after preparing a number of bottles of milk, the pail could be used as an ice-box by packing ice around the bottles.

CEREBROSPINAL MENINGITIS.

DR. WM. P. NORTHRUP gave his experiences with this disease during the present epidemic, which began March 1st. The first case he saw was fortunately a typical one, and the diagnosis was readily made. His youngest case was five months old and his oldest twenty-three years old. He referred to two boys who were playing ball in a particular lot, became very much heated and drank cold drinks; shortly afterward, both were seized with violent delirium and all the symptoms of a severe case of cerebrospinal meningitis. One boy recovered, the other died. On the same day he was called to see a girl who, two weeks before, was at a dance, became overheated, had cold drinks and was taken down with the disease. Several other cases were reported and a composite picture of these cases presented.

Some cases had prodromata of general malaise for from a few hours to two days; then appeared the symptoms of pain, headache, fever, vomiting, rigidity of the neck, opisthotonos, the eruption of petechiæ (which resembled flea bites) and delirium, somnolence, Kernig's sign, general hyperesthesia very well marked, and the peculiar attitude well described by French writers as the "gun hammer" position. There was also arrythmia and cardiac slowness. Dr. Northrup said he was at sea when attempting to give a prognosis, in fact, he felt he could not make one.

Lumbar puncture seemed to aid in diagnosis only. His plan of treatment was to use a combination of bromids, 30 grains, chloral hydrate 10 grains, and opium ¼ of a grain. The mortality varied in different epidemics and what it would be in the present one he could not say. These epidemics followed prolonged and severe winters which kept the people shut up. Recently he had met an army officer from Alaska, where there was an epidemic of this disease, and it seemed strange that almost all the cases occurred among those who carried packs through the mountain passes, who lived outdoors, with plenty of ventilation and exercise. Although at present the disease was epidemic, he did not think it contagious. Dr. Northrup concluded his remarks by showing some pictures from the work of Councilman, Mallory and Wright, of Boston.

Dr. Henry Koplik said that all the cases he had seen had been quite characteristic and offered few difficulties in diagnosis. In the majority of the cases the diplococcus intracellularis was found by lumbar puncture. He believed that with the exercise of ordinary care the average physician could make a diagnosis of cerebrospinal meningitis in any given case. Yet, there were cases that one might see late in the course of the disease which were not so characteristic. Several of these cases he had met with in the wards of the hospital and occurred among children under two and a half years old, and especially in nurslings as young as five months of age. In breast-fed infants the onset of the disease was hardly noticed by the mother because, as a rule, she was too busy with her work. Suddenly the child would have convulsions which would quite commonly be mentioned as the first symptom. The child would have convulsions with some temperature for weeks without special symptoms, at least typical symptoms. In such cases the study of the temperature and the course of the disease gave no hint as to what was going on. The child would appear quite well between the rises of temperature. Such cases were examined carefully for otitis media and for the plasmodium malariæ. He could not forget the cases in the wards in which nothing could be found that was positively diagnostic.

In 5 per cent. of the cases no history could be obtained of the child having been taken ill suddenly. The child would be watched for several days and then cerebrospinal meningitis would be suggested. Such cases were not at all infrequent, especially during the course of an epidemic. He had seen in his office 2 cases giving symptoms of a tonsilitis, with temperature and much irritability. Another type of the disease was met with abroad, especially in London. Dr. Osler mentioned it in his paper written in 1899. The cases were very obstinate and began in a rather indefinite way, at times with convulsions and high febrile movement; then the child would not take note of his surroundings and would gradually pass into a condition of opisthotonos. Such cases were formerly thought to be tuberculous because, after one week, the temperature would drop and would not rise again above 101° F. and finally the child would become hydrocephalic.

With regard to lumbar puncture he could not say that he had ever cured a case by the adoption of this measure; but he had made the patients more comfortable and prevented complications by its employment. In young infants and children the mortality was very high and death resulted not only from sepsis but also from the effects of pressure. One of the most serious complications was hydrocephalus; many children seen with enormous heads will be found to have a history of cerebrospinal meningitis during the early months of life. Therefore, he believed, lumbar puncture did a great deal to prevent complications, especially when the child was comatose, with a high temperature range, etc., because of the constant pressure of the fluid. In the older children lumbar puncture would relieve the headache, drain off some of the purulent fluid and so prevent absorption.

The question of injecting antiseptic fluids into the canal he believed should be discussed. He had never done it in children because of two reasons:—(1) the mortality was not higher than 40 per cent. when no injection was given, but higher if given; (2) the withdrawal of a certain amount of fluid and the reinjection of fluid seemed to cause some disturbance which might do harm in these cases.

At the present he had 7 cases in one ward and, personally, would not care to have a healthy baby placed among them.

Dr. Henry Heiman said many of these cases resulted fatally because of the pressure produced by the fluid and, therefore, removal of the fluid seemed to be indicated. If the fluid had been cloudy, the clearing up of the fluid obtained by lumbar puncture was an indication that the patient was improving; for this fluid contained the germs of the disease; if one could drain the canal and take away the toxins and germs in the fluid, relief would follow.

Dr. E. Libman said that he had had five or six years' experience in the bacteriology of these cases of cerebrospinal meningitis and there seemed to be a difference in the growth of the germs today comparing them with those seen five or six years ago; today they were easier of cultivation and more accurate results were obtained. In getting data for statistical purposes he did not think it was fair to include the cases seen five or six years ago. The mortality in different epidemics differed greatly.

Dr. Henry Koplik said that the mortality in epidemics differed from 25 per cent. to 90 per cent. irrespective of any given treatment. If one method of treatment was followed he said that one could then make comparisons; one should not say that because the mortality was large in one epidemic that this was the general mortality. He thought that the mortality was lower this year than in preceding years. The mortality was now about 40 per cent.

Dr. Charles E. Nammack said that among the first 27 cases of cerebrospinal meningitis seen at Bellevue Hospital, 24 had died; 11 of these were in children and 10 of them died; this certainly meant that we were in the midst of a very fatal epidemic. Every case he had seen personally had died. He reported the case of an Italian, seventeen years old, whom he expected to die within forty-eight hours. Lumbar puncture withdrew pure pus. Lysol was introduced (15 cc.) with amelioration of the symptoms, but within forty-eight hours the symptoms returned in great severity. A second injection of the same strength was given and again with benefit. The second lumbar puncture produced purulent fluid and the third pure serum. Another injection was given and the patient left the hospital in very good condition except that he had a sciatic neuritis. This case he reported as being one in favor of the lysol treatment. The next three patients had all left the hospital by way of the morgue, and in two he succeeded in obtaining autopsies; one was a pure case of cerebrospinal meningitis; in the other patient there was a lobar pneumonia, an acute ulcerative endocarditis, an old fibroid and chronic endocarditis, a calculus, a pyonephritis of one kidney, and, therefore, he should have died. The third case was a fulminant one and autopsy was refused. The patient had an intense endocarditis. At that time there were at least 2 cases in the wards that he thought would recover, and each was receiving the lumbar puncture and lysol injection treatment. He thought we should not feel discouraged because we could save only 40 per cent. of the cases.

Dr. William P. Northrup closed the discussion and demonstrated by means of a drawing that frequent washings of the spinal canal could not wash away the greenish-yellow deposits that extended down into the sulci of the cord and elsewhere. By making a puncture well down in the cord he did not believe one could get rid of the material situated high up; such a method would not result in draining away the thick greenish-yellow pus situated in the layers of the pia mater. When speaking of lumbar puncture he asked that there be kept in mind the futility of attempting, by this means, to remove this material which was so deeply situated in the layers of the pia. Lumbar puncture he believed was only good for making diagnoses and for hospital reports.

The Etiology of Hydrophobia.—G. Daddi (*Riv. di Clin. Med.*, May 30, 1903) experimented upon dogs, and in every case in which rabies was proved to be present, he found the little bodies described by Negri. These bodies, so constantly found in the nerve centres of animals who die of hydrophobia, would appear to be parasites of some nature, rather than degenerative form of cells. Whether they are the causative element of hydrophobia or not, they appear to furnish a sure method of diagnosis of the disease.—*Medical Record.*

THE PHILADELPHIA PEDIATRIC SOCIETY.

Stated Meeting, Tuesday, June 14, 1904.

J. H. JOPSON, M.D., PRESIDENT.

A CASE OF MICROCEPHALIC IDIOCY.

DR. ALFRED HAND and DR. S. S. WOODY presented the patient a female, four and a half years old. An older brother had died of tuberculous meningitis at the age of nine years. A few years before the birth of the patient, the mother had had a miscarriage at five months. Two months before the patient was born, the mother fell from an open trolley-car.

The child weighed 7 pounds 2 ounces at birth. Her present weight is 18 pounds. She was fed at the breast for fourteen months, and was able to sit alone at the age of twenty-one months. At that time, she was able to say "Mamma" and "Papa," but has now lost this accomplishment. While her height, 82.6 cm., is about that of a child of two years, her weight is below the normal for one year; and the measurements of the head are less than those for six months of age. The knee-jerks are exaggerated, and the arms are moved with apparent spasticity. The fontanels are closed. The child is able to get around by holding on to the furniture, but cannot stand alone.

DR. HAND, in discussing the etiology, said that the condition was probably the result of some intrauterine pathologic process; but that the history of a previous miscarriage should prevent too much importance being atached to the fall.

A CASE OF ICTERUS WITH PURPURA AND PERSISTENT HEMORRHAGE FROM A BLOOD-LANCET WOUND.

DR. JAMES ELY TALLEY reported the case, which will be found in full in this number of ARCHIVES OF PEDIATRICS, page 696.

GENERAL EDEMA IN CASES OF MARASMUS.

DR. TALLEY reported, also, a case of general edema in marasmus. The child, which was a male, five months old, of Hebrew parentage, had been fed for a few weeks on the breast, and then with various forms of food. When first seen, it was unable to take milk at all, even when predigested, retaining only albumin-water and barley-water. A few days later, there was puffiness under the eyes. The whole body then became swollen and after a week the child appeared twice its natural size, from diffuse anasarca.

During this time, a small specimen of urine was obtained, and showed absolutely no abnormalities. The baby died in convulsions about ten days from the beginning of the dropsy.

Dr. J. P. Crozer Griffith said that he had seen both cases with Dr. Talley; and that, while both had been intensely interesting, they had been very puzzling as to their exact nature. The family history in the first case, with the characteristic complex of symptoms, indicated to his mind the probability of congenital obstruction somewhere in the course of the bile-ducts. He mentioned an article in a recent number of an English journal, which seems to show that a more or less complete obliteration of the bile-passages may occur in the small passages within the liver itself. This may be temporary, being compensated for later. Dr. Griffith mentioned a case of complete obliteration of the main bile-duct that he had recently seen at the University Hospital. This, of course, was a different condition, and one certain to end fatally.

As to the other case, the diagnosis was very obscure. One occasionally sees in infants curious edemas without evident cause. Dr. Griffith mentioned, also, some remarkable cases of widespread effusion into the serous cavities seen by him, in which the cause was not evident, and in which recovery was complete. In marasmic children, one frequently sees edema of the hands, feet and face; and a more extensive edema is quite frequent in scurvy; but Dr. Griffith had never seen edema such as that presented by this infant, except when due to Bright's Disease. The cause can only be surmised. The case is similar to the interesting cases, often reported in medical literature, in which there is unexplained edema. These cases sometimes seemingly appear in epidemics.

Dr. L. J. Hammond referred to the fact that it is generally admitted by surgeons that the cause of lack of coagulability of the blood in icterus is not the blocking of the bile, with its accompanying jaundice, but the obstruction of the duct of Wirsung, shutting off the pancreatic fluid, as well as the bile. In the absence of structural change, as shown by the results of treatment in this case, the obstruction should be looked for lower down. Dr. Hammond, therefore, suggested that the jaundice might have been due to a plug of mucus in the common duct, at the ampulla of Vater; or, to edematous obstruction from infection.

Dr. Talley said that some such cause might have been active, but he thought it possible only to speculate as to the exact cause of the jaundice. The case of edema he considered particularly interesting as an example of the incorrectness of the older teaching, that the edema of advanced marasmus is due to nephritis. This is certainly not true in many cases, and there are now on record a number of autopsies in which nephritis has been shown to have been absent.

TETANY IN AN INFANT WITH PERSISTENT CONTRACTURES.

DR. ELEANOR C. JONES reported the case which will be found described in full in ARCHIVES OF PEDIATRICS, August, 1904, page 613.

DR. D. J. MILTON MILLER said that the case is interesting as affording a striking example of a condition rare in this country, and because it exhibits both of the most important etiologic factors, viz., rickets and gastrointestinal disturbance.

DR. GRIFFITH said that, from the description, the case seemed a typical one and very interesting, because of its unusual duration. He has seen only 2 cases that lasted as long. One presented for a long time persistent contracture at the knees, which was of obscure nature and had been supposed to be due to contraction of the tendon, until the child developed other signs of tetany. The contraction at the knees disappeared in the meantime. Dr. Griffith believes that tetany is increasing in this country. More cases are certainly being reported; and, although this may be due to the fact that the disorder is now being looked for more commonly, it seems to him more likely that it is actually increasing in frequency. The disease is closely related to rickets, which is certainly more common here than formerly.

DR. HORACE CARNCROSS remarked that the case was of interest because the child was a girl. In infants, boys are more commonly affected, while later in life women are more frequently attacked than are men.

DR. ROBERT N. WILSON referred to a recent case in a nurse thirty years of age, who had an entirely negative previous history; and who, after having eaten lobster and sauerkraut, had an attack of colic that was followed by typical tetenoid spasms in the hands and feet. These spasms lasted for a few hours and then disappeared entirely.

DR. JONES, in closing, expressed herself as pleased that the diagnosis had not been questioned, as she had thought possible.

Current Literature.

PATHOLOGY.

Allaria, G. B.: Primary Tuberculosis of the Generative Organs in a Girl Aged Eleven Years. (*La Pediatria,* Vol. xi., No. 6, p. 383.)

Primary tuberculosis of the female genitals in infancy is extremely rare. The author collected 19 cases from literature, and reports an additional case in a girl aged eleven years. This child had been suffering for some time from a leucorrheal discharge, and was admitted complaining of pain in the abdomen, fever, profuse sweating, a sharp pain in the left chest, and a dry cough. The examination of the lungs and heart was negative, but the abdomen was found full of gas, and painful on pressure. The fever continued with remissions for a week. During the last few days there was intense dyspnea and cyanosis, and the spleen was enlarged. On the twenty-second day pneumonia appeared on the right side, and on the twenty-sixth day the patient died. At necropsy the lungs were found studded with numerous tubercles, all of which were fresh. A few cheesy nodes were found around the trachea. The peritoneum showed an old tuberculous peritonitis, and enlarged mesenteric nodes were found in the abdominal cavity. The genitals presented the greatest interest. The uterus was moderately enlarged, and its cavity was converted into a tuberculous abscess, owing to the accumulation of a large amount of dense cheesy substance. The uterine mucosa showed numerous tubercles. There was a double tuberculous salpingitis. The hymen and the vagina and vulva were not affected, nor were the ovaries, the bladder and the upper urinary tract.

The rarity of primary tuberculosis of the female generative organs in children is explained by the incomplete development, and the absence of the sexual function at that age. Yet, an analysis of the cases reported in literature shows that this form of primary tuberculosis occurs, though very rarely, in children of all ages. One case has been reported in a girl of seven months, the daughter of tuberculous parents, who had a tuberculous ulcer of the vulva (Demme). In almost all cases, exposure to infection could be proved, as the children were daughters of tuberculous parents or companions of consumptive children. In a few of the cases reported, the primary nature of the disease was doubtful. The diagnosis of these cases is very difficult, but the bacillus of tuberculosis should be looked for in the vaginal discharge, when tuberculosis of these parts is suspected. Tuberculosis of the internal genitals may go on in infancy without any symptoms. The diagnosis is more simple when tuberculous peritonitis has developed. The prognosis is the more favorable the more external are the lesions. The surgical treatment is the only successful one for the external forms. In the internal forms the diagnosis is so difficult, that no treatment can be outlined, and in the peritonitis, laparotomy is required.

MEDICINE.

Baginsky, Adolf: Typhoid Fever in Children. (*Boston Medical and Surgical Journal*, December 31, 1903. and January 7, 1904.)

After giving a brief review of the literature as regards the etiology of the disease and the peculiarities and mode of spreading of the typhoid bacillus, the author states that among children there is apt to be a greater amount of degeneration and necrosis in the intestine than in adults. Ill-defined symptoms are present at the onset, especially in very young children, there being headache, malaise, anorexia, pains in the throat and either diarrhea or more commonly constipation. Later the patient sleeps a great deal, as the fever increases; the tongue is grayish white with red edges and a triangular red point. The eyes are somewhat injected, and the abdomen, though soft, is tender.

Epistaxis may be present early and the blood be swallowed so as to appear only in the stools. The spleen gradually becomes swollen, and from the sixth to the ninth day the typhoid spots appear, small, isolated and slightly elevated. Later diarrhea occurs, the stools being brownish, foamy, fetid and either thin or liquid. Then the somnolence increases, the hearing often becomes difficult and cough is frequently troublesome. At this time usually both the diazo reaction in the urine and the Widal agglutination reaction are obtainable. The milder cases now begin to improve, all the symptoms gradually becoming lighter. In young children the rise of temperature is apt to be sudden, so that the fever is high at the outset; in older children the rise is gradual, as in adults. The course of the disease is shorter the younger the child, two weeks being the average for children between three and four years, while above that age it is from seventeen to twenty days. Notwithstanding the usually shorter course, the disease may be just as prolonged and as serious as in adults.

The nervous symptoms do not differ greatly from those in adults, irritability and restlessness marking the early stage, while stupor, or delirium alternating with stupor, mark the later stages; meningitis is an occasional complication. Bronchitis is a regular occurrence, and various affections of the larynx also may be present. The proportion of leukocytes to erythrocytes is from 1 to 650 up to 1,200. The eosinophiles are diminished, and almost completely disappear during the height of the fever, and return only after the temperature has become normal.

The mucous membrane of the mouth is reddened and has a darker color than normal; if the child becomes unconscious and lies with the mouth open, the lips become dry, cracked and bleed easily.

Stomatitis and noma may occur as complications. The pharyngeal mucous membrane is also reddened and dry, while the tonsils are generally enlarged and the seat of follicular inflammation. An unusually protracted angina with very high fever may be the only early symptom of typhoid. Baginsky believes that the disease is introduced into the system in some cases through the inflamed throat. The urine frequently contains albumin, along with desquamated epithelium and casts; a true nephritis may complicate the disease.

Clinically there may be very mild or abortive forms of the disease, the diagnosis being made only because of the epidemic and the positive diazo and Widal reactions. Relapses are more apt to take place in children than in adults, and the relapses may terminate fatally. The severe cases, with marked nervous and mental symptoms may very closely simulate tuberculous meningitis.

Among the complications, parotitis, noma, intestinal hemorrhage, peritonitis from perforation and acute otitis media are discussed; while among the sequelæ mania, melancholia, multiple neuritis, motor aphasia, deafness, purulent joint inflammation, periostitis, osteomyelitis and furunculosis are mentioned.

As to prognosis, the author gives his hospital mortality in 88 cases as 5.6 per cent.; but says that in private practice the number of deaths is less. The author inaugurates his treatment by giving small doses of calomel every half hour or every two hours. The cool pack not oftener than three times a day is preferred, as a rule, over the cold bath; or, the slowly cooled bath may be used, keeping the child in the tub until a slight chilliness develops. The younger the child the more cautious must be the use of refrigerant measures, since great harm may be done to the heart, to the vasomotor and respiratory muscles by too frequent stimulation of the surface by cold.

For nourishment Baginsky employs bouillon, yolk of egg with wine and water, milk, cornstarch preparations, peptonoids, beef juice, plasmon and somatose. The intervals of feeding are made from one-quarter to one-half hour, and the amount given from one to two teaspoonfuls. For drink, water or a cereal water with wine is used. Meat is not given until the temperature has been normal for at least a week.

As a hypnotic, chloral is given in doses of 0.5 to 1.5 gm. by stomach or rectum; alkaline water for albuminuria and urotropin toward the latter part of the disease.

Berg, H. W.: The Distinctive Character of the Temperature Curve of Measles and Scarlet Fever. (*Medical Record,* July 2, 1904, p. 1.)

The author objects to the usual division of the diseases into the stages of (1) accession, (2) fastigium and (3) defervescence, and would divide them into: (1) the eruptive stage; (2) the stage of defervescence; (3) the stage of desquamation. He considers the curve of uncomplicated measles distinctive, in consisting of a gradual rise, with possibly one sharp drop, up to the second or third day of the eruption, when there is a sudden decline of the temperature to almost normal in a few hours, a veritable crisis.

Scarlet fever when uncomplicated has a much simpler curve than measles. There is an abrupt rise in the first six to eight hours (sometimes, however, it is slower) to 103°F., or 105°F. The fever is maintained for three to four days, usually rising a little until the eruption has reached the legs and dorsum of the feet; the temperature then falls slowly by lysis.

The value of bathing in high temperature is discussed, Berg's preference being for a tub bath at 80°F., the temperature of the water being raised at the end about ten degrees.

Simon, Robert M.: Reflex Disturbances Associated with Adherent Prepuce. (*British Medical Journal*, March 12, 1904, p. 596.)

Three cases are reported, the first a boy aged eighteen months, who suddenly became unable to walk, complained of pain in the hip increased by attempt at walking; notwithstanding the dragging of the leg, hip disease was not present, inasmuch as after circumcision there was complete and immediate recovery. The second case was that of a boy of fourteen years who appeared to have severe intestinal colic; failure of treatment by ordinary methods was followed by success after circumcision, no medicines being given. The third patient, three years old, was troubled with night-screaming and complained of pain in the abdomen. Treatment for intestinal indigestion brought no improvement, but the narrowness and adhesions of the prepuce were corrected, and after this there was permanent cessation of the symptoms.

In commenting on the cases, the writer explains the first case as due to an inhibition of the spinal nerves; the second as a reflex pain, and the third case was probably a pain from a distended bladder and erection of the penis, since the child would go to sleep after the urine had been voided.

Benedetti, Dino: The Glycogenic Function of the Liver in Children with Pertussis. (*Riv. di Clin. Pediatr.*, Vol. i., No. 9, p. 592.)

At the Provincial Pediatric Congress of Tuscany, held at Florence in June, 1903, Crisafi showed that the glycogen reaction was present in 80 per cent. of children suffering from whooping-cough, and suggested that glycosuria may exist in these cases as the result of a reflex stimulus from the nervous system to the liver, resulting from the irritation of the laryngeal terminals of the vagus, and the nasal terminals of the trigeminus, in pertussis. It is well known that irritation of the vagus, the pons, the fourth ventricle, etc., produce at times a hyperglycemia and consequently a glycosuria, because the liver, as the result of the vasomotor changes which follow such irritations, liberates a portion of its glycogen which enters the blood as glucose. Benedetti tried to test this theory experimentally in a series of cases of pertussis. He examined the urines of thirteen children with whooping-cough, and satisfied himself that they were not suffering from spontaneous glycosuria. He then gave each of these patients a dose of levulose, and four hours later examined the urine for the presence of carbohydrates. Of the thirteen children thus tested, twelve showed levulosuria. Only one urine gave a negative result, and this only on account of the high temperature in this case, which increased the combustion of the levulose ingested. In 3 cases in which the iodophile reaction was looked for it was found present to a very marked degree.

Rudski, A. P.: Gonorrheal Urethritis in Boys. (*Med. Obos.*, Vol. lxi., No. *3*, p. 165.)

A review of the literature and his own experience (3 cases) have led the author to the following conclusions:—

The disease often runs a chronic course in boys, lasting several months and being quite severe. Local treatment by injection is possible and beneficial. Protargol and largin have been used in the strength of ¼-¾ per cent. Sandalwood oil is given internally and is usually well borne.

The cure cannot be pronounced as accomplished without repeated microscopical examinations for gonococci.

Tcherno Schwarz, B.N.: The Bacteriologic Diagnosis of Diphtheria. (*Russki Vratch.*, Vol. iii., No. 1, p. 7.)

Clinical observation has fallen into undeserved neglect since the advent of the bacteriologic era. The inevitable reaction is, however, slowly rearing its head in many quarters.

The author compares the clinical and the bacteriologic method in the diagnosis of sore throat. He says in conclusion:—

(1) The repeatedly negative result of examination for the Löffler bacillus in membranous sore throat or in croup is proof sufficient of its nondiphtheritic nature. There are undoubtedly cases of severe laryngeal stenosis caused by other bacterial agents than Löffler's bacillus.

(2) Equally reliable is the positive result of the test for this bacillus, *provided the clinical picture corresponds to that of diphtheria.*

(3) On the other hand, in all cases presenting a clinical picture which is at variance with that of diphtheria, the finding of Löffler's bacillus is not sufficient evidence, since the bacilli may be present accidentally. Here the clinical diagnosis must be relied upon, at least for the time being, until we learn to recognize the signs of systemic poisoning with the diphtherial toxins.

SURGERY.

Hamilton, Alice: Surgical Scarlatina. (*American Journal of the Medical Sciences*, July, 1904, p. 111.)

After reviewing the literature of the subject the following are given as conclusions:—There are 174 cases of surgical scarlatina reported in detail: operations and wounds of all kinds, as well as inflammatory processes, are supposed to predispose to scarlatinal infection. Surgical scarlatina is said to differ from medical scarlatina in: (1) The large number of adults attacked. (2) The shorter period of incubation. (3) The mildness or absence of angina. (4) The fact that the eruption begins at the wound or in some other unusual region. (5) The slightly precocious desquamation.

Proof of the existence of a special form of scarlatina rests upon the large number of cases recorded, in which an eruption resembling that of scarlet fever followed some injury, and upon the frequency of epidemics of scarlet fever among surgical cases in the days before complete isolation of fever cases was practised.

Careful examination confirms the view held by most French writers, that the eruption in question is often due to septic infection and is not scarlatinal; and that the variations of socalled surgical scarlatina from the typical form are not due to the unusual mode of infection, but to the difference in the infectious agent.

In the cases where the disease was undoubtedly scarlatina, there is no convincing evidence that the relation between the wound and the scarlet fever was more than a coincidence. The statistics of epidemics of scarlet fever in surgical wards lack the necessary comparative statistics as to the same disease in the medical wards.

There is as yet no convincing proof in the literature that surgical scarlatina is anything more than scarlet fever in the wounded.

Coutts, J. A., and Rowlands, R. P.: A Case of Purulent Pericarditis Associated with Empyema in a Child Aged Two-and-a-Half Years. (*British Medical Journal*, January 2, 1904, p. 9.)

The child had had a bad cough for one month following pneumonia; there was also languor, loss of appetite and occasional vomiting. On admission to the hospital the cardiac dullness was found to be increased, and the apex beat almost impalpable; the heart sounds were weak, but clear, and no pericardial friction was heard. There was dullness on the right side behind, increasing from the sixth rib downward; over this area the breath sounds were feeble and bronchial. The left lung was practically normal, respirations 58, pulse 136, temperature 101°F. Exploration at the right base on the third day withdrew only blood; the needle seemed to enter the lung. On the sixth day the child was much worse, there being a left-sided bronchitis, and the cardiac dullness having increased. The apex beat could not be felt and the heart sounds were inaudible; no pericardial friction.

Mr. Rowlands removed a portion of the fifth left costal cartilage and a part of the sternum so as to expose the pericardium. On opening the pericardium the pus gushed out to a height of three feet, and probably half a pint escaped. As there were no masses of lymph discovered irrigation was not employed; a rubber drainage tube was inserted and the wound closed. The immediate effects of the operation were strikingly good, the pulse and respiration improving and the cyanosis diminishing. The pus from the pericardium gave a growth of the pneumococcus.

On the following day pus was withdrawn from the right chest, and incision made with removal of a portion of rib. The pleural pus contained pneumococci along with other cocci and bacilli.

Three weeks after the operations the temperature was normal, the empyema wound had ceased discharging, while there was still a copious flow from the pericardial wound. The cardiac dullness has diminished and the heart sounds are regular and distinct. Two months after operation the pericardial discharge had ceased; heart sounds clear; cardiac dullness extends from left nipple line to left sternal border. The temperature was 103°F., and there were signs of bronchial catarrh in both lungs. Next the child developed measles, the pericardial discharge reappeared and there was a second attack of pneumonia, which, however, cleared up in ten days. The child wasted, however, and had a great deal of pain in the precordium; death came sixteen weeks after the two operations.

In commenting upon the case Dr. Contts remarks that purulent pericarditis is far more apt to be found at necropsy in empyema cases than during life, and that the condition is not a rare one. Careful examination of the cardiac dullness, palpation and auscultation of the apex beat will reveal many cases during life, especially in empyema. Occasional aids in diagnosis are extreme pallor, orthopnea, irregular pulse and other signs of cardiac and respiratory distress; precordial pain may be prominent.

As to treatment, the only hope is from surgical interference, and Mr. Rowlands remarks that even then recovery is unlikely, in most cases. He remarks that the left pleura is apt to cover the pericardium and be found behind the sternum as low as the fifth or sixth costal cartilage, and that pericardial effusions are not apt to reflect this pleural edge outward; consequently it is always difficult to operate on the pericardium without opening the left pleural cavity. He advises the use of the exploring needle in the left costoxiphoid angle, directing the needle inward and upward. After discussing the various operations for draining the pericardium, Rowlands gives the mortality of 60 published cases as 65 per cent., and remarks that the real mortality is probably greater, as many unsuccessful operations have not been recorded.

HYGIENE AND THERAPEUTICS.

Huber, Francis: Otitic Serous Meningitis; Lumbar Puncture; Recovery. (*American Medicine*, December 5, 1903, p. 902.)

The case was that of a child two and one-half years old who had large adenoids and a chronic ear discharge; ten days before entering the hospital there were general convulsions; the seizures became more frequent and occurred both night and day. The child was semicomatose, with mottled surface and cold extremities. Pupils dilated, the right larger; convergent strabismus and lateral nystagmus. Tâches cérébrales readily produced. Pulse rapid, but no irregularity. Reflexes exaggerated.

Three days later Dr. W. Freudenthal, on account of greater severity of the convulsions, opened the mastoid, and after clearing away all the diseased bone noted bulging of the dura. Fearing to increase the infection by opening the dura through the mastoid wound, he advised lumbar puncture to diminish the tension. Dr. Huber and his assistant drew off 30 cc. of fluid that day and 16 cc. the following day. After the second withdrawal the symptoms improved, so that the child was discharged twenty-two days after the operation. Two months later she seemed in perfect health.

Martinez Vargas, A.: Fungosity of the Umbilicus, Treated with Protargol. (*La Med. de Los Niños,* Vol. iv., No. 45, p. 257.)

Fungosities of the umbilicus are difficult to treat on account of their persistency, and give rise to a great deal of discomfort on account of the constant discharge and the impossibility to keep the parts clean. Palliative measures are often completely useless, and the application of chemical caustics or the galvanocautery are the only methods which can be hoped to effect a cure. The author reports a case of umbilical fungosity in a child of three and a half years. The cord fell off on the fourteenth day after birth, and left a projecting and ulcerating stump which grew and discharged a fetid and sometimes bloody fluid. This condition persisted during the entire three and a half years. Before applying the galvanocautery, a solution of protargol, 5 per cent., was applied to the fungosity on cotton. This was covered with some gauze and bandaged in place. After eight days the fungosity began to heal; the dressing was renewed a week later, and the whole stump was found covered with new epidermis. Twenty-five days after the second application of protargol the cure was complete.

Martinez Vargas, A.: A Serum against Whooping-Cough and the Medicinal Treatment of this Disease. (*La Med. de Los Niños,* Vol. iv., No. 44, p. 225.)

In 1895 the author recommended phenocoll hydrochlorate as the most efficacious remedy known in the treatment of whooping-cough. Since then, a number of observers in various parts of the world have endorsed his opinion. An analysis of the various medicinal agents recommended against whooping-cough within the last eight years shows that the only useful agents are heroin and the serum against whooping-cough made by Leurieaux. The author says that the treatment of whooping-cough today, reduces itself to the use of a small number of remedies and of the serum above mentioned. He employed the serum in 6 cases, and while it produced a certain improvement in the symptoms and was found to be harmless, it did not show such radical effects as diphtheria antitoxin. Possibly, this incomplete immunization was due to the fact that the serum was injected fifteen or twenty days after the beginning of the spasmodic stage. The dose was 5 cc., and in 2 cases the injection was repeated. Better results are undoubtedly obtainable when the remedy is given within the first few days of the disease. In one child of two years the cough suddenly stopped six hours after the injection, but reappeared within a week. In another child, eighteen months old, a morbilliform rash appeared on the eleventh day of the disease, and in a girl aged six years, bronchitis and bronchopneumonia, gastroenteritis and furunculosis developed, and the serum had no effect upon these complications. As regards drug-medication, the author emphasizes the value of a combination of phenocoll and heroin (1 gm. of phenocoll and 1 cgm. of heroin in twenty-four hours), and reports that he has been able to obtain excellent effects with this treatment in an epidemic of whooping-cough.

Kapsammer, G.: Epidural Injections in Enuresis in Children. (*Archiv. f. Kinderheilk.*, Vol. xxxviii., 1904, p. 377.)

Two forms of enuresis are mentioned, the paretic and the spastic. Apart from faulty training, which is responsible for many cases of nocturnal enuresis, the etiology of the disease varies.

The cause of diurnal enuresis, a form which occurs more rarely, is difficult to explain. In this form involuntary loss of urine occurs only while the child is in the upright position.

Cathelin introduced epidural injection as a therapeutic measure in enuresis.

The writer refers to a previous article in which he reported 25 cases cured; in 2 of these there was recurrence, in one after two years, in the other after five months. Since then 20 cases have been treated; of these, 15 were cured and 5 improved.

Physiological salt solution was used in large amount, 10-40 cm. During the injection there is frequently transient pain in the lower extremities. With the exception of vomiting in 2 cases, no other unpleasant effects were noted in connection with 500 injections.

A description is given of the technique employed by the writer. Puncture is made slightly above the middle of a line drawn between the cornua coccygea of the sacrum. In each case three injections should be given within a week. As regards the theoretical basis of epidural injection, the writer acknowledges that he is unable to add anything to the hypothesis stated in his first publication upon the subject. It goes without saying that strict asepsis must be observed in carrying out the treatment which has been found to succeed where all other measures failed.

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Original Communications.

AN INVESTIGATION OF THE INFLUENCE OF LABORATORY FEEDING ON 216 INFANTS WITH DISEASES OF THE GASTROENTERIC TRACT, WITH SPECIAL REFERENCE TO THE WEIGHT INDEX.*

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In the summers of 1902 and 1903 I was able to study the effects of percentage feeding from laboratory milk in a considerable number of infants of the dispensary class. This unusual opportunity was made possible by the use of the Milk Fund which has now become an established charity contributed to annually by the people of Boston. By means of this fund we have been able for several years to feed during the summer and fall a large proportion of all the sick infants of Boston with acute diarrhea, who have applied to the out-patient departments of the Children's Hospital and of the Infants' Hospital, as well as many from other dispensaries. The number of cases treated in this way has averaged about three hundred each year. In the following series I have, however, included only those cases under one year of age which I have personally observed with the special object in view of studying the influence of a pure milk, accurately modified and appropriately adapted to the individual needs of the patients, together with a series of 65 cases at the Infants' Hospital, whose treatment was for the most part directed by Dr. Charles Hunter Dunn. I wish to acknowledge my indebtedness to Dr. Dunn for permitting me to make use of his records.

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* Read before the Sixteenth Annual Meeting of the American Pediatric Society, etroit, Mich., May 30, 1904.

Diagnosis of Cases Treated.—The number of cases whose records permitted study was 216. These consisted of 131 cases of fermental diarrhea; 20 cases of chronic gastric and intestinal indigestion; 18 cases of ileocolitis; 15 cases of acute gastric and intestinal indigestion; 9 cases of acute intestinal indigestion; 9 cases of chronic intestinal indigestion; 9 cases of chronic gastric indigestion; 4 cases of acute gastric indigestion and 1 case of severe stomatitis which was primarily responsible for the infant's general disturbance. It is probable that many of the cases classified as fermental diarrhea were in fact cases of ileocolitis. The cases classed as acute, including ileocolitis, fermental diarrhea, acute gastric and acute intestinal indigestion, on the average, were ill seventeen days before applying to the hospital for treatment. The cases classed as chronic, including chronic gastric indigestion and chronic intestinal indigestion had been ill on the average 3.2 months before applying for treatment. It is obvious, therefore, that in many instances the distinction between acute fermental diarrhea and ileocolitis and between chronic fermental diarrhea and the chronic intestinal indigestion was very difficult to make. Again, many of the cases classed as acute gastroenteric disturbances were acute infections superimposed upon chronic gastric and intestinal indigestion.

I have not attempted to express by the terms "infantile atrophy," "marasmus" or "malnutrition," the condition of the infants' nutrition when first seen. With very few exceptions all the babies were decidedly under weight. Fully 25 per cent. of the cases had only attained a weight development of between 40-60 per cent. of the average infants of the same age. Almost all of the cases were first observed in the summer or early fall and were brought in because of the persistence of an acute attack of vomiting or diarrhea. The statistics, therefore, represent not only the influence of good feeding on the weight development of poorly nourished infants, but they show what may and may not be accomplished by proper regulation of the food in poorly nourished infants who are stricken with the acute gastric and intestinal disturbances such as occur in hot weather. That the cases were for the most part seriously ill is indicated both by the weight development of the infants and by the length of time they were ill before applying for treatment. With very few exceptions the hygienic surroundings of the infants remained by necessity the same as before. The only essential change common to all was that of the milk which was supplied to them from the laboratory modified in its percentages and amounts according to the individual requirements.

Weight Index.—To bring order out of a chaos of statistics, I have sought another basis of comparison than that of the number of grams per week each child gained or lost while under treatment. Obviously such a basis is not wholly fair, for the rate of growth in the average healthy infant varies during the months of the first year. This variation may be expressed as follows:

	Total gain in pounds	Weekly gain in ounces
First three months - - -	5	6
Second " " - - -	3½	4
Third " " - - -	2	2½
Fourth " " - - -	3	3

If, therefore, we are comparing the influence of food on two sick infants, one two months old and one seven months old, we cannot fairly take the average gain per week of the first infant as a standard by which to judge the second, because there is in the infant of two months an inherent tendency to gain weight faster than in the infant of seven months.

The weight of the average infant during the first twelve months of life has been carefully worked out by Dr. Holt. These averages are based on the result of over ten thousand observations on infants who were healthy and digesting normally. The weight curve representing these observations may, therefore, very properly be taken as a constant by means of which we may estimate the percentage development of any infant in comparison with the average healthy infant. To express this relationship between a given case and the average infant I have used the term *weight index,* that is:

$$\text{Weight Index} = \frac{\text{The weight of an infant.}}{\text{Weight of the average infant of the same age.}}$$

If the weight index is multiplied by 100 the result expresses in per cent. the weight development of the infant.

An infant whose birth weight and subsequent growth corresponded exactly to that of the average infant would, therefore, at all times have a weight development of 100, irrespective of the variations in the rate of growth during the four quarters of the first year which have been mentioned above. As long as this percentage development is maintained we know the infant is gaining proportionately as fast as the average infant. If the gain in weight of such an infant is slower than that of the average child, its weight development becomes proportionately less than 100; if the gain in weight is more rapid than that of the average child its weight development would exceed 100.

If an infant weighs more than the average at birth its weight index is naturally more than 1.0, and its weight development exceeds 100. For example, following the formula given above, an infant whose weight is 8½ pounds at birth has a weight development of 120 per cent. If such an infant should maintain over the average child its advantage in weight development, which it has at birth, its quarterly gains would have to be, as compared with the average infant, 6¼ pounds instead of 5 pounds; 4¼ pounds instead of 3½ pounds; 2½ pounds instead of 2 pounds; and 3½ pounds instead of 3 pounds.

In a similar manner an infant weighing 5 pounds at birth will have a weight development of only 70 per cent. If such an infant should develop proportionately to the average infant, its quarterly gains would be considerably less than the average, that is, it would need to gain only 3¾ pounds instead of 5 pounds; 2½ pounds instead of 3½ pounds; 1¾ pounds instead of 2 pounds; 2½ instead of 3 pounds.

It is evident, therefore, that the number of ounces gained per week are not a fair standard by which alone to judge the progress which is being made in development. If the 8½ pound baby gains the number of ounces per week of the average infant, its percentage development would steadily diminish; whereas, the same weekly gain in the case of the 5 pound baby would cause its percentage development continually to increase.

The weight index enables us to express in definite percentages the relative progress made by infants of different degrees of development. By means of it we may also compare a gain or loss in percentage development of one quarter of the year with that of another quarter, in the same infant, or in two infants of different ages whose nutritive development we are comparing.

In the majority of cases of infants of the dispensary class we can place no reliance on the statements of the parents as to the birth weight. It is, therefore, rare to be able to estimate with any

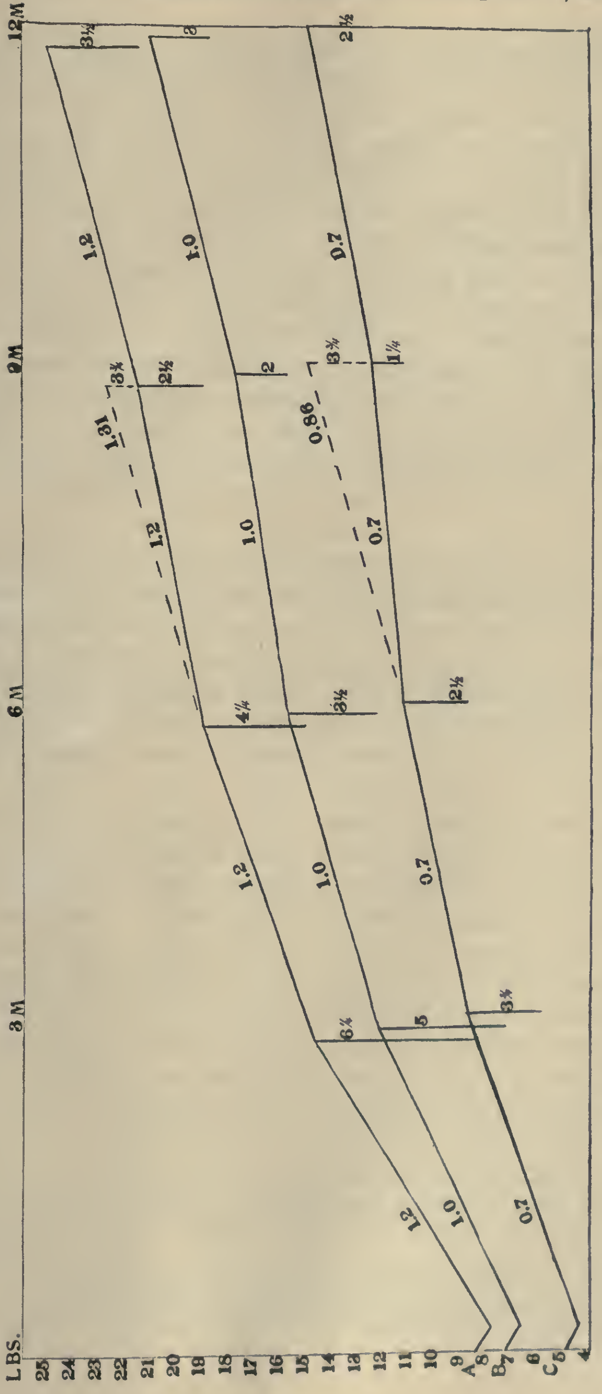

CHART I.—WEIGHT CURVES FOR FIRST YEAR. LINE B REPRESENTS WEIGHT CURVE OF THE AVERAGE INFANT. LINE A REPRESENTS THE CURVE OF AN INFANT WITH A WEIGHT-INDEX OF 1.2. LINE C REPRESENTS THE CURVE OF AN INFANT WITH A WEIGHT-INDEX OF 0.7.

degree of certainty the weight indices at birth. We can, however, weigh such infants when they first come under our observation and so determine the weight indices at the beginning of the treatment. Subsequent weighings will give us the means of estimating subsequent weight indices and of determining and expressing in definite percentages the progress which the infant is making in its weight development.

Chart I. has been plotted to express diagramatically what has been mentioned above.

The middle line "B "represents the weight curve of the average healthy infant, as plotted by Dr. Holt. This curve is taken as the constant by which to estimate the weight index of any infant. The perpendicular lines represent the number of pounds the child gains in the four quarters of the first year. The weight index of such an infant is 1.0, the weight development 100 per cent.

The upper curve "A" represents the theoretical curve of an infant weighing 8½ pounds at birth, with a resulting weight index of 1.2. If such an infant were to maintain throughout the first year the advantage in weight development with which it starts out in life, its quarterly gains in pounds would be as are indicated in the perpendicular lines. These will be seen to vary considerably from those of the average healthy infant represented in curve "B."

In a similar manner curve "C" represents the theoretical weight curve of a 5 pound baby, with a weight index of 0.7, and the perpendicular lines show the quarterly gains in pounds, which would be necessary to maintain throughout the first year the weight development with which it starts in life. These are seen to be considerably less than that of the average healthy infant.

Now, for example, if infant C and infant A each gain from the sixth to the ninth months 3¾ pounds, instead of the theoretical gains expressed in the perpendicular lines, one will find by working out the above formula, that the weight index of infant C has been raised to 0.86, a gain of 16 per cent. in weight development; that the weight index of infant A has been raised to 1.31, a gain of 11 per cent. in weight development. In other words, although each infant has gained the same number of pounds in three months, the smaller infant C has gained proportionately 5 per cent. more in weight development than the larger infant A.

The weight index, then, while not embodying any fixed law of growth, may be used to express in definite percentages the variations in the weight development of an infant, which may occur as a result of natural growth or of disease.

WEIGHT DEVELOPMENT OF THE INFANTS IN THIS SERIES.

The weight indices when the infants were first weighed gives us the best way of showing the extremely low condition of nutrition of the infants in this series when they were first brought to the clinics. These are shown in Table I. Over one quarter of the cases showed a percentage developmnt below 60; one-half of the cases were below 70, and only 3 per cent. of the cases had attained a percentage development of 100 or more. It seems to me that this is a striking commentary on the effects of the ordinary methods of feeding which prevail among the unenlightened poor of our large cities.

TABLE I.

Showing the weight development as estimated by the weight indices of 213 infants, and the groups into which they were divided as a result of treatment.

Weight index in per cent.	No. of Cases.	Percentage.	Group I.	Group II.	Group III.	Group IV.
31-40	1	0.4	1	0	0	0
41-50	12	5.6	8	1	2	1
51-60	43	20.1	24	8	6	5
61-70	54	25.3	28	13	10	3
71-80	39	18.3	22	8	7	2
81-90	38	17.8	16	17	4	1
91-100	19	9.3	8	5	6	0
101-110	3	1.4	1	2	0	0
111-120	3	1.4	1	1	1	0
121-130	0	0.0	0	0	0	0
131-140	1	0.4	0	0	1	0
	213	100.0	109	55	37	12

CLASSIFICATION ACCORDING TO GROUP.

In studying this series of cases, I have divided them into four groups.

GROUP I.—Cases which maintained or increased their weight indices while on the laboratory milk and entirely recovered from the acute gastric and intestinal symptoms for which they were brought to the clinic.

GROUP II.—Cases which showed a loss in weight indices and yet recovered from the acute gastric or intestinal symptoms and showed material gains in weight.

GROUP III.—Cases which for the most part recovered from the acute gastric or intestinal symptoms while under treatment, but whose weight was not materially increased.

GROUP IV.—Cases which died while under treatment.

The relation of the diagnoses to the above division into groups is shown in Table II.

TABLE II.

	No. of Cases.	Group I.	Group II.	Group III.	Group IV.
Fermental Diarrhea - -	131	68	37	19	7
Chronic Gastric and Intestinal Indigestion -	20	10	5	4	1
Ileocolitis - - - - - -	18	7	3	4	4
Acute Gastric and Intestinal Indigestion -	15	8	3	4	0
Acute Intestinal Indigestion	9	4	3	2	0
Chronic Intestinal Indigestion	9	5	2	2	0
Chronic Gastric Indigestion	9	4	3	2	0
Acute Gastric Indigestion -	4	2	2	0	0
Stomatitis - - - - - -	1	1	0	0	0
	216	109	58	37	12

In the tabulated statistics of these cases, I have arranged, so far as possible, the data concerning the case number in the hospital records, the age, the diagnosis of the gastric or intestinal disease, the number of weeks the infant was ill before being brought for treatment, the weight indices, expressed in per cent., at the first and at the last weighings, the gain or loss in weight indices, the initial loss in weight before the infant began to gain, the total number of grams gained or lost between the first and last weighings, the total number of grams gained from the lowest weight reached while under treatment, and the condition of the patient at the end of the treatment. These tables have been omitted owing to their bulk.

GROUP I.

This comprised 109 cases or 50.4 per cent. of all the cases treated. The average length of time each case in this group was kept upon the milk, that is, the time between the first and last weighings, was 8.5 weeks. The shortest length of time for a single case was one week, and the longest was thirty-one weeks. The average gain in weight index, expressed in per cent., was 8—none of the cases fell below the weight index when first observed. In 1 case the weight index was raised from .59 to 1.15, or a gain of 56 per cent.; in another from .52 to .95, or a gain of 43 per cent.; in another from .51 to .80, or a gain of 29 per cent.; in another from .51 to .79, or a gain of 28 per cent. There were 5 others who gained over 20 per cent.; 14 who gained from 15 to 20 per cent.; 10 who gained from 10 to 15 per cent.; 28 who gained from 5 to 10 per cent.; 35 who gained from 1 to 5 per cent., and 13 who maintained their initial weight indices.

The average gain per week between the first and last weighings was 149 grams. The average gain per week from the lowest point reached to the last weighing was 156 grams.

GROUP II.

This includes 58 cases, or 26.8 per cent. of all the cases treated. The average length of time each case in the group was kept upon the milk was 5.9 weeks. The shortest length of time for a single case was five days, the longest was twenty-eight weeks, but this group was as a whole under treatment for two and one-half weeks less than Group I. The results were very satisfactory in that the recovery from the acute gastric and intestinal disturbance occurred and was associated with a gain in weight in each case. The average weekly gain in weight was, however, only 79 grams, or 94 grams, if estimated from the lowest point reached while under treatment. The gain was not sufficient to maintain the weight indices, the average loss of which was 3.4 per cent., as compared with the gain of 8.2 per cent. in Group I. The cause of this difference, as may be seen by referring to Tables I. and II., was not due to the difference in the kind of disease from which the infants were suffering, nor to the physical development of the infants when first seen. The virulence of the infection or the poorer hygienic surroundings may possibly be a partial explanation, but in my opinion the chief explanation is to be found in the shorter time each infant of the group received the milk.

Groups I. and II., therefore, represent the cases which, all things considered, did exceedingly well. Together they represent 167 cases, or 77 per cent., of the whole. Table I. shows that of the 56 cases whose percentage development, as judged by the weight index, was between 40 and 60 per cent., 33 are classed in Group I., and 9 in Group II. Many of these were to all appearances cases of what would usually be classed as infantile atrophy.

GROUP III.

Group III. includes 37 cases, or 17.2 per cent. The average loss in weight index was 7.2 per cent., or a fraction more than twice as much as the loss in Group II. The average length of time the cases were kept upon the milk was 3.7 weeks, or about two-thirds that of Group II. The average loss in weight per week was 47 grams estimating from the first to the last weighings. If we take into consideration the gain in weight from the low point reached, the average loss was only 6.5 grams per week, showing that the group as a whole had at the end of the 3.7 weeks of treatment almost recovered the initial loss in weight due to the acute gastric or intestinal condition and to the restriction of food necessary to meet the symptoms.

Fifteen of the 37 cases had recovered completely from the acute gastric or intestinal symptoms when taken off the laboratory milk, 11 others were improved, and 11 were not improved.

Letters were written to all cases not well and thriving at the time the laboratory milk was stopped to trace, so far as possible, their subsequent history. Cases that died of the gastric or intestinal disease for which they were being treated soon after the cessation of the hospital treatment have been included among the fatal cases in Group IV. None of the unfavorable cases in Group III. died, so far as could be learned, but as several cases were not heard from in reply, it is reasonable to suppose that some of those classed as "not improved" died subsequently.

GROUP IV.

Of the 216 cases treated 12 or 5.6 per cent. died in spite of everything that could be done in the way of careful feeding and medical treatment. This number includes those cases which began as out-patient cases and, subsequently growing worse, were referred to the house and there died.

Statistics of mortality are sometimes misleading and it will, I think, be worth while to go more into the detail of the classification of the fatal cases.

The purpose of this experimental investigation has been to study the influence of feeding, together with appropriate medical care, upon the nutrition of infants who were suffering from acute and chronic diseases of the stomach and intestines, especially those cases which occurred in atrophic infants. In the selections of cases which could appropriately be fed from the Milk Fund, none was considered too ill to receive the milk; whereas, many infants of good nutrition and with mild attacks of diarrhea were allowed to continue on their previous milk-supply. This series of cases, therefore, represents the most severe cases which the clinics afforded. They were all under one year of age. Certain fatal cases which were fed upon the laboratory milk were not included in the above series, because they afforded no basis of comparison. The fatal cases which were excluded for this reason were as follows: one case associated with severe congenital syphilis and acute otitis media; one with tubercular bronchopneumonia; another with nontubercular bronchopneumonia; one case of tubercular meningitis, and another of general tuberculosis.

There were, as has been stated, some cases in Group III., 8 in number, who were "not improved" at the time of their discharge, but whose subsequent histories could not be traced. It is fair to suppose that some of them died. If we should assume that all of the 8 doubtful cases died, the total mortality would be raised from 5.6 to 9.2 per cent., but this is, of course, an extreme point of view to take.

TABLE III.

Showing a summary of results obtained in the four groups into which the series is divided.

No. of Cases.		Average length of time in weeks on the laboratory milk from the first to the last weighing.	Average gain or loss in weight index expressed in percentages.	Average gain or loss per week in grams between the first and last weighings.	Average gain per week in grams from the lowest weight reached until the last weighing.
Group I.	109	8.5	+8.2	+149.	+156.
Group II.	58	5.9	—3.4	+ 79.	+ 94.
Group III.	37	3.7	—7.2	— 47.	— 6.5
Group IV.	12	3.7	——	——	——

A few of the important points in connection with each of the fatal cases may be of interest.

Case I. (1470). This infant was six months old. She was breast-fed for four months, after which she was given ⅔ milk and ⅓ water. One child in the family had died of tubercular meningitis, and another was at the time ill with pulmonary tuberculosis. The baby's weight was 10 pounds, showing a weight development of 65 per cent. There were no positive signs of tuberculosis, but for six weeks the infant had lost in weight and strength. The symptoms beginning as an attack of gastroenteric indigestion soon developed into those of ileocolitis. After one month's treatment in the out-patient department the case was referred to the house, where it died at the end of another month. No autopsy was allowed. The suggestion of a tubercular ileocolitis was strong.

Case II. (1480). This infant, premature at eight months, at the end of four months weighed only 7 pounds 2 ounces. She had had an attack of fermental diarrhea two weeks before coming to the clinic. The stools were then normal, but the nutrition very poor, the weight index being only 52 per cent. The child gained one pound in two weeks, and was then suddenly taken with convulsions, followed by diarrhea. In the following two weeks, the gain was only 4 ounces, but the diarrhea improved, then, without any exacerbation of the intestinal conditions, the baby began to lose weight rapidly and died at the end of the sixth week of treatment.

Case III. (1721). This infant was nine months old when first seen. It had been fed on Eskay's Food for six months, and then on milk and water. The weight on entrance was 14 pounds 6 ounces, or 82 per cent. in weight development. For two months the infant had had a severe fermental diarrhea, which for a week had been associated with bloody stools and had evidently turned into an ileocolitis. The child had the laboratory milk for two days without improvement. It was then sent into the house and died at the end of six days.

Case IV. (36310). This infant was three months old. It had been fed on condensed milk, malted milk, diluted cow's milk and proprietary foods. It had had intestinal indigestion for eight weeks, with blood and mucus for three weeks. It was said to have been a large baby at birth, but when first seen its weight development had diminished to 57 per cent. In the course of two and one-half weeks the movements had become yellow and fairly digested and six a day. The vomiting had ceased. The child was, however, too ill to be weighed. It died at the end of the third week of treatment. Bacillus pyocyaneus was found in pure culture in the stools by Dr. Dunn.

CASE V. (35718). This infant was two weeks old. Since birth it had been fed on equal parts of milk and water. The weight when first seen was 2,910 grams (6.6 pounds). It was suffering from fermental diarrhea. It was sent to the floating hospital, where it remained three weeks, losing 380 grams. The baby was kept on the milk for three weeks, during which time the movements had been reduced to two to three a day. There was no vomiting but the baby grew weaker, lost in weight, took practically no nourishment and died on September 3d.

CASE VI. (35725). The infant was ten weeks old and had been fed on condensed milk entirely. He weighed 3,690 grams (7¾ pounds). His weight development was 65 per cent. In two weeks' time he had gained 270 grams. The vomiting had stopped, the movements had been reduced to four a day, and the baby was taking his food eagerly. He was suddenly taken with persistent vomiting, the stools remained the same, his strength failed rapidly and he died on the third day.

CASE VII. (4226). This infant was seven months old and one of twins. For five months it had vomited four or five times a day. The child was sent into the hospital with an attack of fermental diarrhea and on discharge the bowels were in normal condition. Soon after there was a fresh attack of diarrhea, which was allowed to run for a month without treatment, while the weight diminished from 10 pounds 2 ounces to 8 pounds 11 ounces, and the general condition was very poor. There was strabismus, convulsions, rigidity of the neck and apathy. She was again referred to the house, where the meningeal symptoms gradually passed away. The infant was discharged much improved in two weeks, having gained 1½ pounds. The movements were normal. She was then put on a home modification, and in ten days returned with an attack of vomiting associated with rapid loss of weight, which dropped to 8 pounds 5 ounces. Laboratory feeding was resumed, but all treatment availed nothing and the infant was again referred to the house, where it died after an illness of seventeen days. There was no autopsy. The weight development was 61 per cent. when first seen, and 48 per cent. when referred to the hospital on the last occasion.

CASE VIII. (4674). This infant was one of twins. It was five months old and weighed 3,472 grams (7 pounds). The weight development was, therefore, only 47 per cent. The baby had had whooping-cough when four weeks old. There were suspicious signs of tuberculosis at the right apex. For three weeks the symptoms of gastric and intestinal indigestion had been growing worse and the baby was under observation for one week only before it died.

CASE IX. (4276). This infant was seven weeks old. It weighed 4,590 grams at birth (9¼ pounds), making its weight development 147 per cent. It was fed on condensed milk for three weeks and Eskay's Food for four weeks. At the end of that time the weight index was 77 per cent. It had gastric indigestion and constipation when put upon the Milk Fund. Eight days later it developed a severe ileocolitis and died in the hospital.

CASE X. (3657). This infant was eight months old. She weighed nine pounds at birth, showing a weight development of 126 per cent., which at eight months of age had diminished to 53 per cent. It had been breast-fed for one month and since then had received condensed milk. For eight weeks the baby had had intermittent attacks of diarrhea, accompanied by a severe prolapse of the rectum and painful fissures. The mother refused to leave the child in the hospital and the baby died of exhaustion in about three weeks.

CASE XI. (4244). This infant was nine months old. At birth it was said to have weighed 5,456 grams (11 pounds), making its weight index 1.54 or 154 per cent. It had been fed on condensed milk for two months, and after that on Eskay's Food, and when first weighed showed a weight index of only .55 or 55 per cent. It was brought to the clinic for fermental diarrhea of one week's duration. The character of the movements improved, the child gained 4 ounces in three days, then began to vomit and refused food. It was referred to the house, where it remained for two weeks without improvement, was discharged against advice and died soon after.

CASE XII. (4466). This infant, seven weeks old, was said to be a large baby when born. Its weight index when first weighed was .74 or 74 per cent. It was breast-fed for two weeks. It had a fermental diarrhea of two weeks' duration, during which it had been given gum arabic and water. There was a chancroid on the vulva and also a gonorrheal vaginitis. The baby was treated for two weeks, but no improvement occurred. It was learned that the child died soon after treatment was stopped.

GENERAL METHOD OF TREATMENT.

The general method of treatment pursued in the management of these cases was the same in both clinics. Very few of the cases of diarrhea were seen in the first twenty-four or forty-eight hours. If the movements were green and offensive, containing much undigested food, mucus or blood, a laxative either of castor oil, milk of magnesia or calomel, $^1/_{10}$ grain for ten doses, were usually given and in many cases this was supplemented by irrigation of the large intestine, two, three or four times at the beginning of the treatment, but rarely for a longer time than two to four days. Stomach washing was employed in not more than 2 or 3 cases. In almost every case 3 to 5 grains of bismuth were given before each feeding until the movements had been reduced to three or four a day and were of proper consistency and well digested. In some cases with very watery movements an astringent, usually tannigen, in ½ to 2 grain doses were combined with bismuth. Small doses of brandy were prescribed between the feedings in cases which were very weak.

The routine use of barley-water or rice-water until the stools became normal was purposely avoided. It was our opinion that the nutrition of the infants so treated is often unnecessarily taxed by prolonged starvation. A 1 per cent. solution of starch cannot be considered to have much nutritive value. Its chief value lies in the fact that it provides an infant with a sterile fluid and water sufficient to counteract in part the drain upon the tissues as a result of the watery discharges. We believe that a practically sterile fresh milk, if such can be obtained, with greatly reduced percentages of fat and proteids, is quite as efficacious and of far greater nutritive value, after the initial rise in temperature, than the prolonged use of barley-water. As has already been stated the average length of time the acute diarrheas were allowed to run in the series before the infants were brought to the clinics was seventeen days. Sometimes it happened that the infants had during their illness been kept upon cereal waters, and still the diarrhea persisted. In such cases, and in all cases of prolonged diarrhea, the exhaustion produced by the lack of nourishment is often a factor in preventing an infant from combatting the influence of disease. We may starve the bacteria, but we may also starve their host and it is often a nice point to determine whether the benefit incurred by the one is not offset by the injury to the other. I am not attempting to argue that the use of cereal waters for twenty-four or thirty-six hours in the beginning of treatment is deleterious, but I wish simply to raise the question, If their prolonged use until the stools become normal, as one often sees in practice, does not tend to reduce an infant's strength and nutrition to a point which can be avoided with safety and with decided advantage to its nutrition?

The general principle followed in regard to the feeding of all the cases in this series was to begin as soon as practicable on a very weak milk, usually writing a prescription calling for 2 per cent. of fat, 5 per cent. of sugar, 0.25 per cent. whey proteids and 0.25 per cent. of caseinogen. In very young babies the fat was sometimes reduced to 1 or 1.5 per cent. If the diarrhea had been running for several days, and the baby showed signs of exhaustion, the parents were given emergency prescriptions which they took at once to the laboratory and received a basket of milk, the feedings of which were begun that afternoon. In these cases I usually directed that the food should not be given until after the laxative had acted, and after one irrigation had been administered. If the case was not very urgent, or if the diarrhea was of recent occurrence, the mothers were directed to stop all other kinds of food and, until the laboratory milk was received next day, to give only brandy and water, or plain boiled water or barley-water. In a few cases associated with severe vomiting, the use of barley-water or albumin-water or whey for thirty-six to forty-eight hours, preceded the milk prescription. During the hot weather the milk was invariably heated to 155°F. The percentage of lime-water varied from 5 to 15 or 20, according to the indications.

After the first prescription calling for milk of the above-mentioned composition, the subsequent treatment simply followed the general principles of the application of percentage combinations to individual requirements. It was my experience that the element of milk, which an infant finds most difficult to digest in these acute and chronic diarrheas, was the caseinogen. We were, however, generally able to raise rapidly the whey proteids to the maximum amount of .90 per cent., keeping the caseinogen at 0.25 per cent. When the stools had been reduced to three or four a day and were of a fair consistency and fairly smooth, the fats and the caseinogen were gradually raised, even if a small amount of mucus was still present in the movements. The rapidity with which the fats could be raised depended upon the amount of gastric indigestion associated with the diarrhea. In the diarrheas without vomiting the fats were raised much more rapidly than in these cases in which there was both gastric and intestinal indigestion. If the fats were raised too rapidly, they caused either regurgitation or vomiting, loose movements with small lumps of undigested fat, easily mistaken for curds, or a cessation in the gain in weight. If kept too low the movements lacked sufficient bulk and the infant either lost in weight or the gain was too little.

In the beginning of the treatment of a new case we insisted upon very frequent attendance at the clinics as often as two or three times a week, and at each visit, usually, the infant was weighed. The result of the weighing gave us indications for the change in the food no less important and valuable than the data obtained by the examination of the stools. The importance of very frequent visits will be appreciated by all, for the harm which comes from keeping an infant too long on a food, too weak or too strong, is daily impressed upon us by the cases of mothers, who, in spite of warning and instruction, neglect to keep their infants under close observation.

In a general way our object was to work each infant up to the basis on which the healthy average infant of its age should be fed. In doing this I feel that the use of whey as a means of raising the nitrogenous percentage of the food at a time when the power of the infant to digest caseinogen is slight, is of great assistance. One per cent. of nitrogen in the form of whey probably does not have the same tissue building power as 1 per cent. of nitrogen in the form of caseinogen. In these cases of difficult digestion, however, it is not a question of the abstract food values, but one of digestion and of absorption; and there is no question, I think, that in many sick infants we can by the use of whey double the amount of proteids that could otherwise be given without interfering with the infant's power of digestion.

The theoretical basis toward which we worked in increasing our percentage combinations from the low initial formula of 2 per cent. fat, 5 per cent. sugar, .25 whey proteids and .25 caseinogen, with which nearly all cases were started, independent of their ages, is seen in the following table:

TABLE IV.

THEORETICAL BASIS FOR FEEDING A HEALTHY INFANT (ROTCH).

Age.	Fat.	Sugar.	Proteids.	Proteids if Split.		Amount at Each Feeding in		Intervals between feedings in hours.	Number of feedings in twenty-four hours.
				Whey Proteids.	Caseinogen.	Ounces.	Cubic Centimetres.		
Premature....	1.00	4.00	0.25	0.25	0.25	⅛–¾	4–25	1–1½	24–18
	1.50	4.50	0.25	0.50	0.25		4–25		
At term.........	2.00	5.00	0.50	0.50	0.25	1	30	2	10
End of 2d week.	2.50	5.50	0.50	0.50	0.25	1½	45	2	10
End of 3d "	3.00	6.00	0.75	0.75	0.25	2	60	2	9
End of 4th "	3.50	6.50	1.00	0.75	0.50	2½	75	2	8
End of 6th "	4.00	7.00	1.00	0.90	0.60	3	90	2½	8
End of 8th "	4.00	7.00	1.25	0.90	0.75	3½	105	2½	7
End of 12th "	4.00	7.00	1.50	0.90	1.00	4	120	2½	7
End of 4 months.	4.00	7.00	1.50	0.75	1.25	4½	135	2½	6
End of 5 "	4.00	7.00	1.75			5½	165	3	6
End of 6 "	4.00	7.00	2.00			6	180	3	6
End of 8 "	4.00	7.00	2.50			7	210	3	6
End of 9 "	4.00	7.00	3.00			8	240	3	6
End of 10 "	4.00	6.00	3.00			8	240	3	6
End of 11 "	4.00	5.00	3.00			10	300	3	5
End of 12 "	4.00	4.75	3.50			10	300	3	5

The data given above are simply a guide to the rules for feeding of the average healthy baby; they are only approximate and not intended to be followed in cases of difficult feeding without due consideration to the individual requirements.

The influence on the bodily weight of feeding with a very weak modification of a pure milk in the manner described is strikingly shown in Table V. In this it will be seen that in 91 cases, or 44.5 per cent., the loss in weight was immediately checked and the infant began to gain in weight coincidently with the improvement in the gastric and intestinal condition. In a little over half the cases the loss of weight continued for a short time, as the amount of food ingested was not sufficient in strength and quantity to maintain the weight equilibrium of the body. In 178 cases, however, or 87 per cent. of the whole, the initial loss of weight did not exceed 248 grams, or ½ pound. This initial loss in weight usually occurred in the first two or three days, and in the great majority of cases was quickly regained.

TABLE V.

SHOWING THE INFLUENCE OF FEEDING IN CHECKING LOSS OF WEIGHT.

			No. of Cases.	Per cent.	
No initial loss in weight		91	91	44.5	87 per cent.
Initial loss of	1-124 G	(¼ pound)	50	24.5	
“ “ “	125-248 G	(½ “)	37	18.0	
“ “ “	249-372 G	(¾ “)	11	5.5	13 per cent.
“ “ “	373-496 G	(1 “)	8	3.5	
“ “ “	497-620 G	(1-¼ pounds)	2	1.0	
“ “ “	621-744 G	(1-½ “)	2	1.0	
“ “ “	745-868 G	(1-¾ “)	1	0.5	
“ “ “	869-992 G	(2 “)	1	0.5	
“ “ “	993-1364 G	(2-¾ “)	2	1.0	
			205	100.00	

Summary and Conclusions.—The influence of laboratory feeding was studied on 216 infants, with diseases of the gastroenteric tract, the great majority of which were cases of fermental diarrhea and ileocolitis. The acute cases were ill on the average seventeen days, and the chronic cases 3.2 months, before they were brought to the clinic for treatment. They were kept upon the laboratory milk for lengths of time varying from one to thirty-one weeks.

As an aid in comparing the influence of the feeding upon infants of different ages and stages of development the nutrition of each infant at the beginning and at the end of treatment was judged by the estimation of its weight development. This was calculated from the *weight index,* which is simply the ratio of the weight of a given infant to the weight of the average normal infant of the same age. Judged by this standard over 50 per cent. of the cases had a weight development of only 40 to 70 per cent. when first seen. As a result of the treatment, the series is divided into four groups.

Group I.—Cases which maintained or increased their weight index while on laboratory milk and entirely recovered from the acute gastric and intestinal symptoms for which they were brought to the clinic. This group comprised 109 cases or 50.4 per cent. The group as a whole gained 8 per cent. in weight index, or a maximum average gain per week of 156 grams from the lowest weight reached during treatment.

Group II.—Cases which showed a loss in the weight indices and yet recovered from their acute gastric and intestinal symptoms and showed material gains in weight. This group includes 58 cases, or 26.8 per cent. The maximum average gain per week from the lowest weight reached was 94 grams. This was not sufficient to maintain the weight indices, the average loss of which was 3.4 per cent. This group received treatment on the average for only 5.9 weeks as compared with 8.5 weeks in Group I.

Group III.—Cases which for the most part recovered from the acute gastric and intestinal symptoms while under treatment, but whose weight was not materially increased. This group includes 37 cases, or 17.2 per cent. The average length of treatment was 3.7 weeks, the loss in weight index 7.2 per cent., and the average loss in weight from the lowest point reached was 6.5 grams per week. Eleven cases in this group were "not improved," while under treatment. Of these 8 could not be traced and some of them may have died.

Group IV.—The fatal cases. There were 12 in number, making a mortality of 5.6 per cent. in the series of 216 cases, the results of which were known at the time the treatment was stopped.

All the cases in the series were sick infants, and the results are not to be compared with those obtained in the feeding of average healthy infants.

The infants were fed upon appropriate modifications of laboratory milk, usually beginning with very weak whey-cream mixtures. This milk was administered within twelve to eighteen hours after the first visit, and was gradually increased in strength. In one-half the cases there was no initial loss in weight following this method; in 87 per cent. of the cases, the initial loss was less than one-half pound (248 grams).

DISCUSSION.

Dr. Kerley.—There must be some difference between the dispensary children of Boston and those of New York. It is impossible for me to feed as high fat to this class of patients as Dr. Ladd has used in Boston. In the dietetic management of the acute intestinal disorders I am not able to resume milk until the temperature becomes practically normal and until the stools approximate the normal as regards character and frequency. When milk is resumed I never gave it stronger than ½ per cent. fat and ½ per cent. proteid, and 4 per cent. sugar.

With regard to the cases of indigestion I believe that Dr. Ladd would have gotten better results if he had washed the stomach more often. For a few years past I have been accustomed in cases of acute digestive derangements to wash the stomach out daily or every other day; this increases the babies' appetites and their capacity for food. This procedure has been of special value in the cases in which there is no vomiting, the evidence of stomach derangement being loss of appetite, and a very weak food capacity. It is surprising to observe the large amount of mucus removed from a child's stomach in which there has been no vomiting.

DR. FREEMAN.—One of the most important things in Dr. Ladd's paper is the working out of the weight index and I question whether it would not have been better to attempt to show the results by measurements of length rather than by weight. If a child at birth weighs 5 pounds and measures 17 inches in length the weight index should be corrected for that child; or, if the child measures 19 or 20 inches in length the weight index should be more than normal gained by a normal child, because this would be a long but emaciated child.

DR. CRANDALL.—Another factor which should be considered is that well-developed or well-nourished babies at birth frequently do not gain in proportion to those weighing the same and yet not so well developed or nourished. A thin child of large frame often gains very rapidly during the first three months. I should like to ask Dr. Ladd if these large babies, weighing 10 pounds or so, kept up the weight index to the end of the first year. I think that the large babies would incline toward the average and so would not keep up the weight index.

DR. LA FÉTRA.—Dr. Ladd's contribution is of the greatest value and I hope that he will continue his investigations, and go even further and consider both the children of high weight, 8½ or 9 pounds, and those of low weight. It has been my observation that small babies, those born prematurely or even at term and weighing 4, 5 or 6 pounds, will increase in weight more rapidly than those born at term, weighing 7½ or 8 pounds, and at the end of one year they will attain a weight more than three times their birth weight. Whereas, larger children, as a rule, will not increase so rapidly. A baby weighing 10 pounds at birth will seldom weigh 30 pounds at the end of twelve months; whereas, a baby weighing 7 pounds will frequently weigh 21 pounds at the end of that time. I think a norm should be established for both very large and very small babies.

With regard to the treatment of gastrointestinal affections in summer, at the Vanderbilt Clinic in New York, I have the mothers use cereal waters at first; later I often make use of one of the proprietary foods during the early period of treatment and before milk is resumed. Barley-water and the proprietary foods, are low in fat. In all these cases I believe that when milk is resumed the fat should be kept very low, but as soon as the temperature disappears the fat can be gradually increased, as well as the proteids, until the normal ratio is established between the fat and proteid for a child of given age. Dr. Holt has pointed out that during the first three or four months the healthy infant's capacity for fat is comparatively great, and the child can take three times as much fat as proteid. Later on the capacity for fat becomes less, being but twice as much. At the end of a year the proteids should be from 2.5 to 3 per cent. and the fat not much greater.

With regard to laboratory feeding of babies it has been my experience that home modification, teaching the mother and nurse how properly to modify the milk, is most satisfactory, even with Dispensary patients. Personally I have had no difficulty in modifying the milk with fair accuracy. If physicians are careful in their instructions to the mothers and nurses no trouble will, as a rule, be experienced in obtaining a modification that is satisfactory.

DR. HOLT.—The reason such a difference of opinion has been shown is because the members are talking of two different things. There are certain conditions in which the milk should be stopped at once, and often for a long time. Again there is a class of cases in which the milk should be stopped for one, two or three days, during the time of the acute symptoms and which could soon go back to milk mixtures. In some forms of summer diarrhea children are often kept from the milk too long. In cases where there is present an acute intoxication, often due to conditions called "milk poisoning" the milk must be withheld until the children are almost well. In others there is sometimes simply diarrhea from indigestion due to hot weather, and in others to the dysenteric organisms. It is in the last two classes of cases especially that milk, properly modified, might be allowed after acute symptoms.

DR. LADD.—In answer to Dr. Freeman, I did not take any measurements at all. The subject I referred to was the weight and had nothing to do with the length of the infants. I was much interested in the use of a very weak modification of laboratory milk, especially in the whey cream mixtures, in checking the diarrheas, and in their influence upon the initial loss in weight. I wish to call attention again to the fact that there was only a small loss in weight in a large proportion of the cases so treated, fully 87 per cent. of the cases losing not more than ½ pound. Unquestionably babies get well by other methods. I think that possibly some of the failures that result from giving these weak combinations of milk in the acute and subacute diarrheas might be due to inaccuracies of modification or differences in qualities of the milk. A weak modification of a stale milk will not accomplish the same results as that of a fresh clean milk.

ACUTE OTITIS IN CHILDREN—A STUDY OF FIFTY-ONE OPERATIVE CASES IN PRIVATE PRACTICE.*

BY CHARLES GILMORE KERLEY, M.D.,

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Attending Physician, New York Infant Asylum; Assistant Attending
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The 51 cases reported comprise the number of cases of acute otitis seen by me during the past two years. Six of these were seen in consultation. Nine had been previously treated by other physicians; they had been treated either for malaria, grippe or typhoid fever. Thirty-six occurred among my own patients. The ages of the cases treated were as follows:

3 months of age	2
5 " " "	2
6 " " "	3
8 " " "	1
9 " " "	3
10 " " "	2
12 " " "	3
13 " " "	5
14 " " "	3
15 " " "	1
16 " " "	1
20 " " "	2
24 " " "	3
30 " " "	2
3 years " "	2
4 " " "	4
5 " " "	2
6 " " "	4
8 " " "	4
10 " " "	1
14 " " "	1

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* Read before the Sixteenth Annual Meeting of the American Pediatric Society, Detroit, Mich., May 31, 1904.

7	of these cases were between	3	and	6	months of age
9	" " " " "	8	"	12	" " "
10	" " " " "	13	"	16	" " "
7	" " " " "	20	"	30	" " "
12	" " " " "	3	"	6	years " "
6	" " " " "	8	"	14	" " "

In seventeen cases the patients were delicate—below the average in strength and development.

In thirty-four the patients were of normal development, and in previous good health.

In twenty-eight cases both ears were involved.

In twenty-three, one ear was involved.

In two, a second attack took place; one after three months, the other after five months.

The otitis was associated with or followed:—

German measles in	1 case
Scarlet fever in	2 cases
Measles in	7 "
Catarrhal colds in	38 "

The otitis was primary in three cases; in these there was no associated illness, no involvement of the respiratory tract.

Pus was found in the middle ear in	48
Serum " " " " " " "	3

Bacteriological examination showed:—

Streptococci in pure culture in	13
Staphylococci in pure culture in	11
Streptococci, staphylococci and pneumococci in	12
Staphylococci and pneumococci in	6
Staphylococci, pneumococci and colon bacilli in	1
Streptococci and staphylococci in	2
Pneumococci in	2
Bacteriological examination not made in	4

Pain and localized signs were present in	17
" " " " " absent "	34

In forty-four cases the otitis was uncomplicated.

In four there was mastoid involvement requiring operation.

In three there was jugular bulb involvement.

There was mastoid disease single in three cases; ages, 3 months, 9 months, and 8 years. There was mastoid disease double in one case, aged 9 months.

Bacteriological examination of pus in the mastoid cases showed:

Pure streptococci in	2
Streptococci and staphylococci in	2

All four cases made excellent recoveries; the wounds closing in from six to eight weeks.

In three cases there was thrombosis of the jugular bulb on one side. In two of these cases the mastoid structure was found normal upon operation. In one the mastoid was slightly involved. Examination of the pus from the ear in the bulb cases showed:—

Pure streptococci in	2
Pure staphylococci in	1

Dr. James F. McKernon, in an unpublished paper, says:

"The question may be asked: 'How can a primary involvement of the jugular bulb take place, without first involving the mastoid structure?' It can take place very easily under the following conditions: With an active, virulent infection of the middle ear cavity, and the presence of a large, irregularly shaped bulb encroaching upon it, and these two spaces separated by only a thin, parchment-like wall of bone, it can become a very easy matter for the infection to pass through this thin plate of bone and poison the blood current, before such infection would have time to travel its usual pathway, namely: through the mastoid structure. That such a complication is not infrequent can be readily comprehended when, in the writer's experience alone, seven such cases have been encountered during the past six months. The successful treatment of this condition is an early operative procedure."

In thirty-three of the uncomplicated cases the discharge ceased and the drum closed in from thirteen to fourteen days, and in seven cases from fourteen to twenty-one days. In four out-of-town cases the exact duration could not be learned. The treatment employed after paracentesis was syringing with eight ounces of 1-10,000 bichlorid every three hours for twenty-four hours, or every four hours for twenty-four or forty-eight hours, the frequency of the syringing and the number of days it was continued being dependent upon the nature and amount of the discharge.

Interesting points brought out by the study of the cases are as follows:

The physical condition of the child appeared to exert no influence upon the susceptibility; two-thirds of the patients were strong, well-nourished children. In none were the tonsils sufficiently involved to require removal. Six cases had sufficient nasal obstruction to suggest the presence of adenoids—they had chronic nasal discharge; were mouth-breathers; and had a persistent cough.

The fact that thirty-eight of the cases, or seventy-two per cent. developed with or followed catarrhal inflammation of the upper respiratory tract, socalled catarrhal cold, emphasizes the necessity for frequent aural examination during and following such disorders, particularly when there is an elevation of the temperature—the temperature which, in the absence of definite clinical signs, we are apt to look upon as due to chronic grippe, malaria, paratyphoid, dentition, and so forth.

The most interesting clinical feature of the study of the cases was the absence of pain or local signs of disease in thirty-four, or sixty-seven per cent. Among those tabulated in the pain group there are a few which perhaps should not be so recorded. In these there were no manifestations of pain such as we generally expect to find, as evidenced by crying, pulling at the ears, or striking at the sides of the head. Neither were there signs of pain or unusual discomfort on local manipulations. Among the pain group are included those who were restless, who slept poorly, or who appeared in any way uncomfortable. Had it been left to pain or local symptoms, a diagnosis of otitis, in thirty-four of the cases, would not have been made at the time it was made. The ears in these cases were examined because of the presence of fever, which could not be accounted for by any of the means which may produce an elevation of the temperature in children.

In the six consultation cases, and in the nine cases which had been treated by other physicians, the possibility of ear involvement had not been considered because of the absence of pain or localized signs.

The diagnosis of otitis was confirmed in each case by well-known New York aurists.

Six of the mastoid and jugular bulb cases followed catarrhal colds. One followed measles. As to the nature of the infection in the ear, bacteriological examination showed the presence of streptococci in pure culture, or associated with staphylococci in all but one case. In this one there was pure staphylococcus infection. In these complicated cases there was never pain, as shown by crying or restlessness; nor was any sign of discomfort elicited by manipulation. Neither was there evidence of involvement of the deeper bony parts through swelling or deformity.

In one only, the seventh case, a girl eight years of age, were there local signs of mastoid disease. This child showed a moderate amount of postauricular swelling, and a displacement forward of the ear.

In three of the mastoid cases the diagnosis was made by the continuation of the temperature after the incision of the drum membrane, a prolapse of the posterior-superior wall of the canal, and the absence of all other clinical manifestations of an explanatory nature. In mastoid disease in adults and older children the temperature only exists during the onset of the cellular infiltration —when the pus has once formed the temperature remains low until such time as there is involvement of the adjacent structures. In infants and young children the temperature is one of the most valuable aids, and is, it can safely be said, always present when there is confined pus in the mastoid. In the cases with bulb involvement the diagnosis was made by the rapid rise and fall of the temperature, following upon acute streptococcus infection of the middle ear, and without other assignable cause for the temperature.

CHART I. The case of which Chart I. shows the temperature range was a girl two and one-half years of age, in previous excellent health. The case began as an acute catarrhal cold, with congestion of the fauces, moderate swelling and congestion of the tonsils. Under treatment the child rapidly improved, the throat being normal on the third day of illness. In spite of this the fever continued, with no evidence of pain or discomfort of any nature whatsoever. The ears were examined with a view to explaining the temperature. Both drums were found bulging. Paracentesis was performed by Dr. McKernon on the fifth day of illness. There was pus in both ears. On the next day, the sixth day of illness, the temperature rose from 100° to 105½° in three hours. At the same time there was a free discharge of pus from both ears. On the following day there was a fall to 99°F., and a rise not quite as sudden to 105°. On the seventh day the temperature ranged between 100° and 102°; and on the eighth day there was another rapid rise from 100° to 105°. There was no pain, and no mastoid tenderness. The child was comfortable and playful when the temperature was low; irritable, restless and drowsy when the temperature was high. Preceding and during the rise, the hands and feet were cold. On the eighth day the child was seen in consultation by Drs. Dench, A. A. Smith and McKernon. No cause for the fever could be demonstrated by physical examination, by examination of the blood, or of the discharge from the kidneys or bowels. Examination of the pus from the ears showed pure streptococci. The diagnosis of jugular bulb involvement of the left side was made. The next day, the tenth day of the illness, Dr. McKernon opened the mastoid and exposed the sinus from the knee to the bulb. The mastoid was found normal, the sinus was empty. There was a clot in the jugular bulb one inch long, extending a quarter of an inch into the sinus. The clot was examined by Dr. Frederick Sondern, who reported that it contained numerous foci of pus. Cultures made from the same material on nutrient agar and on Löffler's blood serum showed, after eighteen hours at 37°C., a decided growth of streptococcus pyogenes. The child made an uneventful recovery; the wound closing in six weeks.

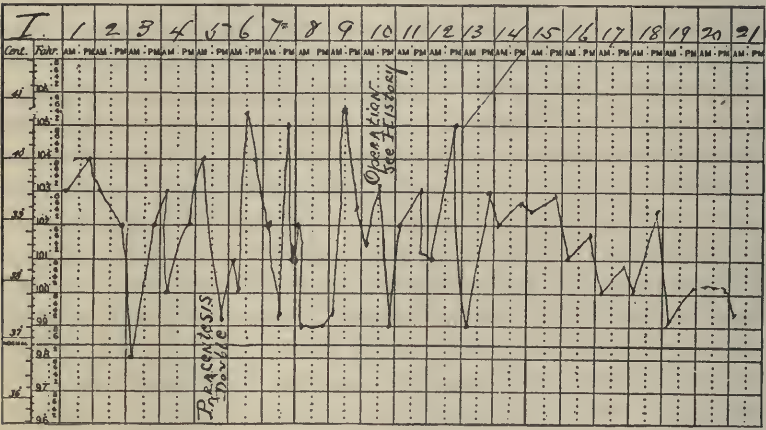

CHART I.

CHART J. The second case, the temperature of which will be seen on Chart J, was a boy, three years of age, in good average health. He had been ill two days with a catarrhal cold which was not sufficiently severe to produce a temperature of 104° to 105°. The ears were examined on the second day, with a view to explaining the high temperature. There was no pain, no tenderness about the ears, no symptoms other than the temperature to attract attention to the ears. The right drum was found bulging. A paracentesis was made by Dr. McKernon. The following day the temperature arose to 104°, when the left drum was incised. There was a free pus discharge from both ears; and a sudden drop in the temperature, was followed by a rise the next morning to 105°, the rise taking place in six hours. During the next thirty-six hours there were wide fluctuations. Physical examination was negative. Blood examination for Widal and for plasmodia negative. On the fifth day of the illness Drs. McKernon and Gruening saw the case in consultation. A diagnosis of jugular bulb infection was made and immediate operation advised. The operation was performed by Drs. McKernon and Gruening. The mastoid structure was normal. A clot was found in the right jugular bulb, completely blocking the sinus. The bony wall covering the jugular bulb was entirely removed. The child made an excellent recovery, the wound closing in six weeks. Bacteriological examination of the original infection in ear showed pure streptococci. The bacteriological examination of the clot by Dr. Frederick

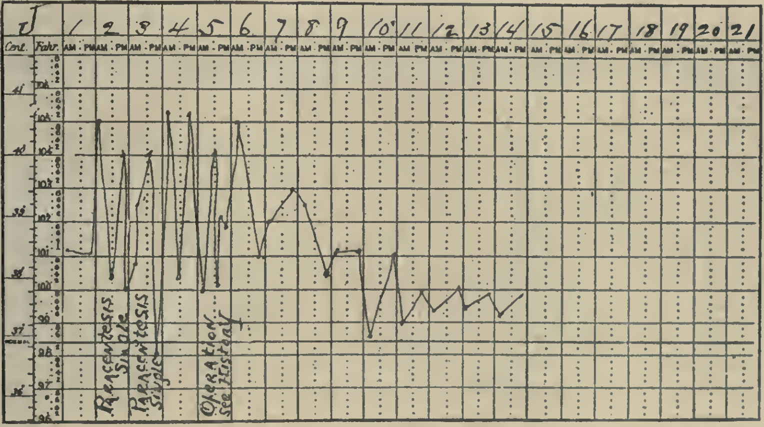

CHART J.

Soudern showed pure streptococci on culture. Streptococci were also found in the blood on culture.

CHART H. The third sinus case was that of a girl 13 months of age. The child developed measles, from which she recovered; the temperature having been normal for three days. The next day, the first day indicated in the Chart, it ranged between 99° and 100°; and the following day it rose to 104°. The child was restless and without appetite. Physical examination was negative with the exception of both ear drums, which were found bulging. There was no evidence of pain, no tenderness about the ears. Paracentesis was performed by Dr. McKernon, followed by a free discharge of pus without influencing the temperature, which ranged between 99° and 104° for the next five days. There was no mastoid tenderness, and no swelling. The child at this time, the sixth day of the illness, was seen in consultation by Drs. McKernon, Gruening and Holt, the diagnosis of jugular bulb infection made, and operation decided upon. The operation was performed by Dr. McKernon, assisted by Dr. Mason. The mastoid structure on the right side was found diseased. The sinus was exposed and a clot removed which was extended into the jugular bulb. The child did well for ten days. Then the temperature arose and ranged from 103° to 105° for eight days, when she died of encephalitis. Bacteriological examination by Dr. Frederick Soudern of the clot found in the jugular bulb showed pure staphylococcus on culture.

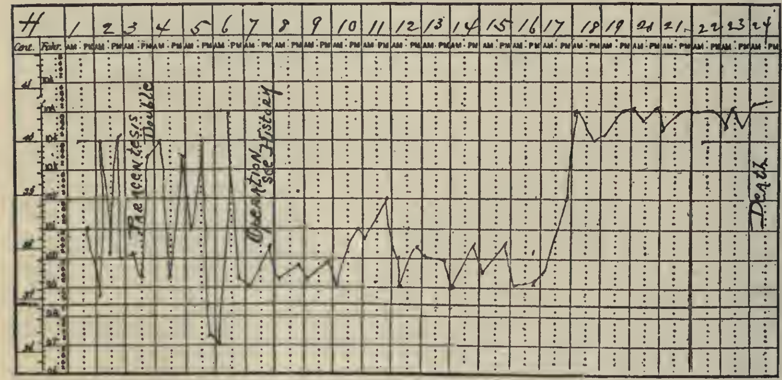

CHART H.

CHART K. Chart K shows the temperature range in a delicate, anemic child one year of age. The parents gave a history of illness of two weeks, with cough and fever. She was under treatment for grippe; and the temperature which had been taken had ranged from 100° to 103°. Physical examination and examination of the blood failed to show a cause for the continued fever. There had been no earache, there was no local tenderness at the time when I saw the child. The ears were examined with a view to explaining the temperature. Aural examination showed bulging of the drum on the right side. Paracentesis was performed by Dr. McKernon. Three days later the left drum was incised. After this the temperature was lower, ranging between 99° and 102° for six days, with loss of flesh and strength. Dr. Gruening and Dr. McKernon then saw the case in consultation. There was no pain, no mastoid tenderness, no swelling. Otoscopy showed prolapse of the posterior-superior canal wall and a granular point at the lower portion of the incision. A diagnosis of mastoiditis on the right side was made. Operation on the mastoid was performed by Dr. McKernon, assisted by Dr. Gruening. The mastoid cells were broken down and filled with pus. Bacteriological examination showed staphylococci, with a few streptococci. The drum closed in six days, and the mastoid wound in eight weeks.

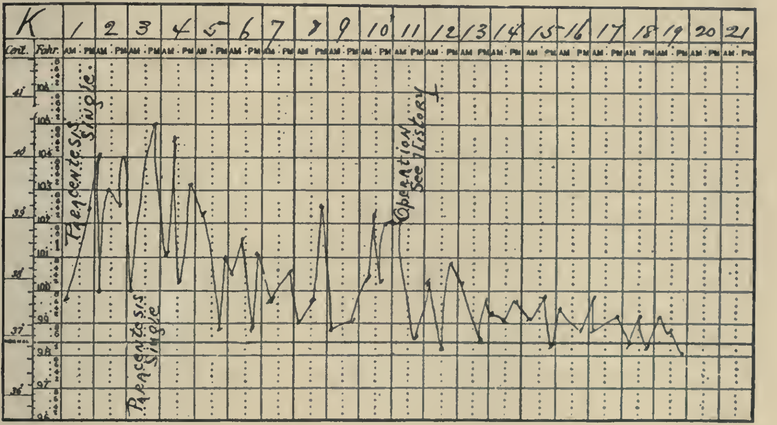

CHART K.

CHART L. Chart L shows a temperature range of acute otitis, mastoiditis and adentitis, in a delicate child three months of age, who had just recovered from an acute attack of double bronchial pneumonia. The child developed an acute catarrhal

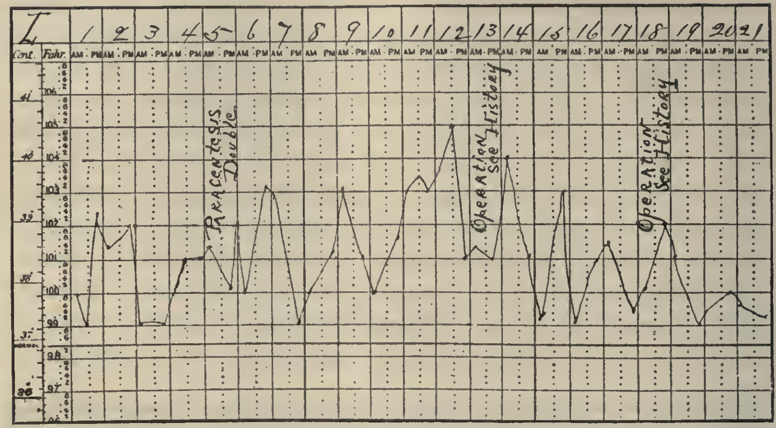

Chart L.

cold, which was readily controlled in two days. The temperature was normal on the third day of the illness. It arose to 101° on the fourth day, and to 102° on the fifth day. In the absence of other clinical signs, the ears were examined to explain the cause of the fever, both were found involved, and incision of the drum membrane was made by Dr. McKernon, followed by a free discharge of pus. The temperature was not influenced in any way, it remaining very irregular—touching 99°, and going as high as 105° during the following eight days. There had been no evidence of pain, no swelling, no tenderness. Bacteriological examination of the pus from the ears showed pure streptococcus infection. A considerable adenitis developed on both sides. On a continuation of the temperature, absence of physical signs to explain the temperature, and prolapse of the posterior-superior canal wall, mastoid disease was diagnosed; and operation for mastoiditis performed by Drs. McKernon and Mason. The right mastoid was opened and found filled with pus. Three lymphatic glands at the angle of the jaw, on the same side, were removed five days later. The largest of the three was found broken down in the middle: the bacteriological examination of which showed pure streptococci. The parts were slow of healing, on account of the weakened condition of the child. The wound closed in eight weeks, and the child recovered.

Case III., Mastoid. The temperature chart for the case of mastoid in the eight-year-old girl is not shown, for the reason that there was no temperature. For two or three days there had been slight pain in and behind the ear; and a day or two of slight discharge, which was further noticed when the case was first seen. There was also moderate swelling behind the ear, pushing the ear forward. The child had suffered with earache during the previous night. The drum was found bulging. Operation for mastoiditis was performed by Dr. McKernon. Examination for pus showed streptococci. The wound closed in four weeks.

Case IV., Mastoid. The temperature chart of the fourth case of mastoid disease was taken away by the nurse and could not be recovered. The patient, nine months old, had been ill for two weeks, in the care of another physician, with rather indefinite symptoms of fever, restlessness, and loss of appetite. The temperature had been taken but a few times; and it had never been above 103°. In a routine examination the ears were included and both drums found bulging. Otherwise there was no evidence of disease. Paracentesis revealed pus in both ears. The child did not improve after the operation, and the fever continued as before. Six days after the paracentesis a diagnosis of mastoid disease was made, the mastoid cells were opened on both sides, and pus was found. There was no mastoid tenderness on either side. Bacteriological examination of pus revealed streptococci and staphylococci. The child made a good recovery.

Chart A. Chart A shows the temperature range in a case of

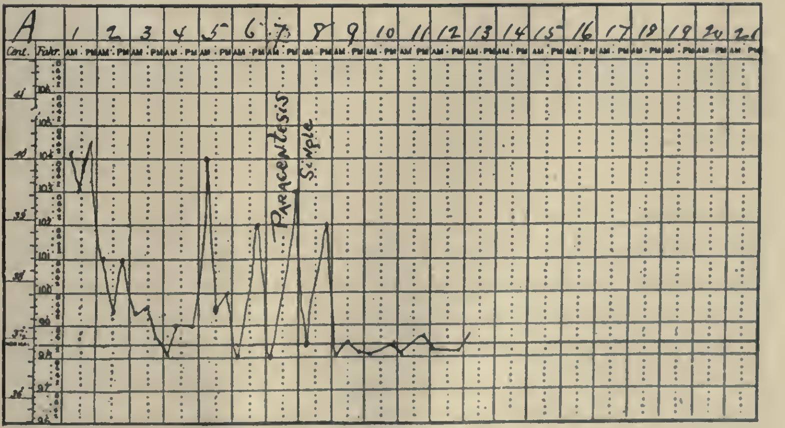

Chart A.

acute otitis following German measles in a child five years of age. The first day the temperature was high—104½°—with the appearance of a well-marked rash. The fever subsided on the second day, and remained normal the following two days. On the fifth day of the illness the temperature arose to 103.8° without explainable cause, and dropped without interference to 99.5°. The next day, the sixth day of the illness, it arose to 102°, and in the morning it dropped to normal. On the seventh day the temperature arose to 103°. There was no pain, nothing to attract attention to the ears. They were examined with a view to locating the cause for the temperature. The right drum was found bulging. Paracentesis was performed by Dr. McKernon, and serum found. Bacteriological examination showed a mixed infection: streptococci, staphylococci and pneumococci.

CHART B. Chart B shows the temperature range in a case of acute double otitis. The patient was a strong, vigorous boy fourteen months of age, who was taken ill with high fever and a

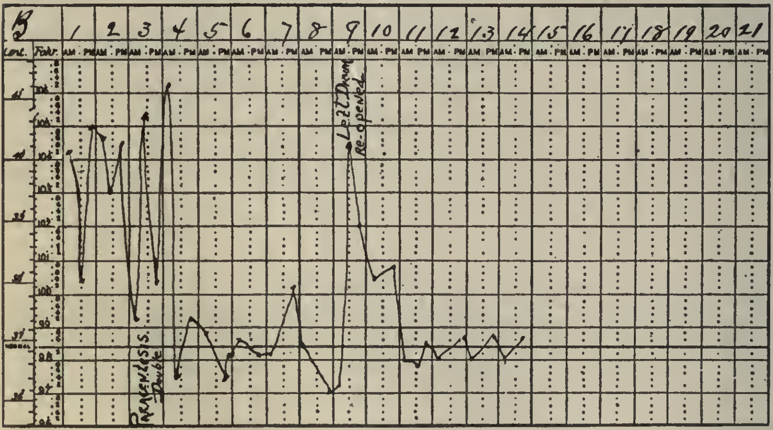

CHART B.

slight redness of the fauces. The respiration was from 50 to 60. The chest was clear; but as a cause for the rapid respiration a diagnosis of a probable central pneumonia was made. On the third day of the illness I saw the patient when the temperature was low. At this time the respirations were 24. The child was playful, and appeared to be in no way inconvenienced. There was not, nor had there been, any evidence of pain in the ears; and there was no localized tenderness about the ears. The blood was negative for plasmodia. The ears were examined to explain, if possible, the temperature. Both drums were found bulging. Paracentesis was performed by Dr. McKernon, who found pus in both ears. On the ninth day of the illness the temperature arose to 104.5° F. It was found that the left drum had closed; this was reopened. The child made an uneventful recovery. Bacteriological examination showed pure streptococci.

CHART D. Chart D shows the temperature range in a case of acute otitis in a rather delicate boy, six years of age. He had been ill a couple of days with a catarrhal cold, the temperature not going above normal. On the third day the temperature arose to 100°. During this day the child suffered from excruciating earache. Among all of the fifty-one cases recorded this boy suffered the most pain. Examination of his ear showed a red and bulging drum on the left side. Paracentesis was performed by Dr. Gruening. A small amount of serum was found. There was no further pain, and the child was well in seven days. Bacteriological examination of the serum was not made.

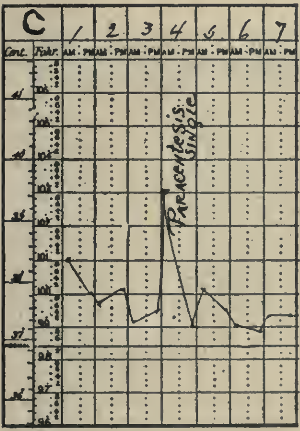

CHART C.

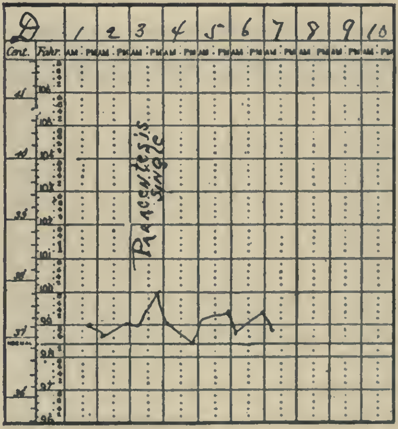

CHART D.

CHART E. Chart E shows the temperature range in a case of acute otitis in a child thirteen months of age. The patient was pale and thin; there was a history of several weeks of low fever, during which time she had been under the care of a physician. During the week previous to my seeing the case, which dates from the second day of the chart, the temperature had been ranging rather high—from 101° to 104°, according to the mother; but it had not been taken regularly. The day previous to my visit it had been as high as 105.3°. At the time of my first visit it was 101°. The following day it remained 100°. The next morning it arose to 103°; and remained between 103° and 105° all day. Inability to find an explanation of the temperature led to an examination of the ears, and both drums were found bulging. Paracentesis was performed by Dr. McKernon. A large amount of pus was present in the right ear, a small amount in the left. The temperature promptly fell to the normal after the paracentesis, and remained there, except for a rise a few days after, which was due to over-feeding. Bacteriological examination of pus showed streptococci, and a few diplococci.

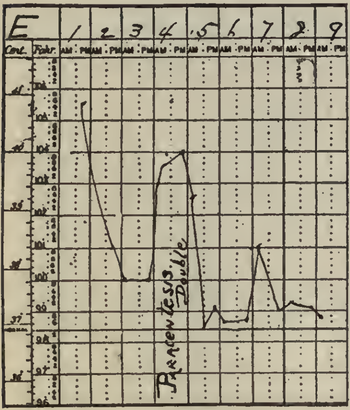

CHART E.

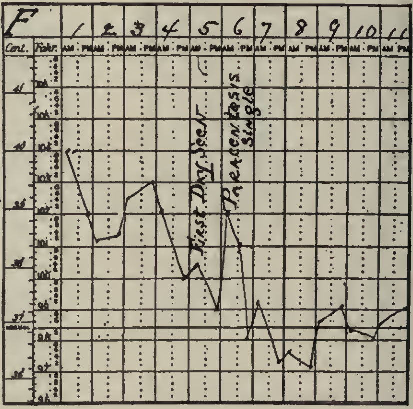

CHART F.

CHART F. Chart F shows the temperature range in a delicate nine months' old girl. The mother gave a history of an illness of six weeks' duration, in which the persistent temperature, which up to this time had not been explained, had been the most prominent symptom. She informed me that I was the eighth physician who had seen the case. Blood examination had been repeatedly made for typhoid and malaria. The child was being treated for malaria when I was called. Physical examination was negative, with the exception of the right ear drum, which was found bulging. Accurate temperature observations were obtainable only for four days before my visit. There was no pain, no localized tenderness, not the slightest evidence that the ear was involved. Paracentesis was performed by Dr. McKernon. Bacteriological examination of the pus showed pure streptococci. The child made an excellent recovery, with no further rise in temperature; and the wound closed on the tenth day after the paracentesis.

CHART G. Chart G shows the temperature range in a strong, vigorous child, twelve months of age, who had been ill one day, with a slight catarrhal cold. There was very slight congestion of the fauces. The temperature was 102° when first seen, but it dropped to normal early in the day, and remained at 99° or below the next day. The child was discharged well on the second day. The following day the temperature arose to 102°, and fell to normal the next day. In the evening of this day, the fourth day of the illness, there was a sudden rise to 102.8. In looking for the cause the ears were examined, and the left drum was found bulging. There was no pain, no discomfort whatever. Paracentesis was performed by Dr. McKernon, and a free discharge of pus followed. Bacteriological examination showed pneumococci predominating, with a few staphylococci. The drum closed and the discharge ceased in eight days.

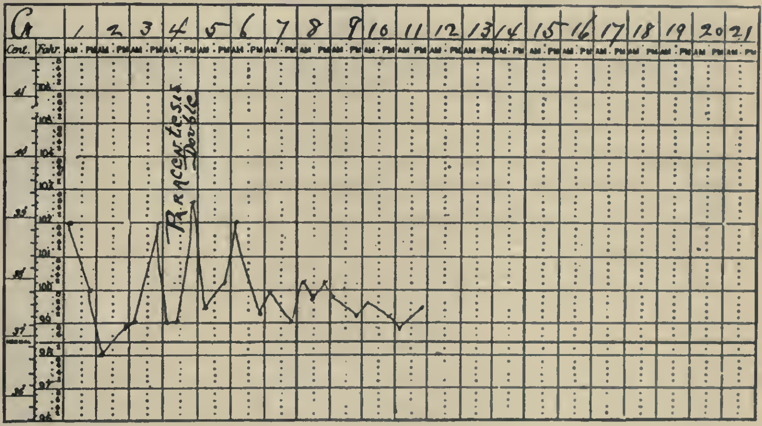

CHART G.

CHART C, on page 755, shows the temperature range of a strong, vigorous boy, three years of age. There was a history of slight fever, the highest temperature 101°, without assignable cause on the part of the family. I was called to see him because of a sudden rise of the temperature to 103°, which is recorded on the chart as having taken place on the fourth day. In examination to discover the cause, the ears were examined last. The left drum was found bulging. Paracentesis and a free discharge of pus was followed by prompt recovery. Bacteriological examination showed streptococci.

In conclusion, I would call attention to a very interesting condition which was present in each of the mastoid and sinus cases. The children did not appear very ill. They felt and acted as though they were ill only when the temperature was high. When the temperature was low, they sat up, played, and were fairly bright. It was difficult in every instance to make the parents realize the necessity for operative procedure. Had not the source of the infection been early discovered, the children would, of course, have soon showed the usual signs of pyaemia.

When practitioners realize the possibilities for serious troubles that the middle ear affords, when they become more familiar with otoscopy, there will be fewer cases of meningitis, few cases diagnosed as typhoid independent of the Widal reaction, fewer cases diagnosed as malaria in the absence of plasmodium in the blood, fewer chronic grippes and fewer paratyphoids.

DISCUSSION.

DR. ROTCH.—On account of the latency of the aural symptoms, the general practitioner does not, as a rule, recognize these cases of otitis media. Pneumonia is another disease which should be spoken of in this connection. I have seen cases, occurring in babies and young children, in which the symptoms apparently were those of a central pneumonia, with the alae nasi working, and other symptoms; the respiratory symptoms were relieved by treating the ear. In cases in which the respiratory symptoms were relieved by inflating the Eustachian tubes and relieving the congestion of the ear this relationship was shown. Cases of otitis media with a discharge from both ears, unless we are skilled in the examination of the ear, should be referred to an aurist. In childhood there is much more danger of infection of the meninges than in adults. I would insist upon the importance of a free incision in the tympanum in order to prevent such complications.

DR. KERLEY.—One of the cases reported I diagnosed as central pneumonia. I happened to see the child always when the temperature was high—105° to 106° F. The child was one year old and the number of respirations per minute was 60 to 75. On the third day of the illness I saw the patient when the temperature was 99.5 and the respirations 24. An examination of the ears revealed the cause of the fever. I had not examined the ears before because I was sure of the diagnosis of central pneumonia.

DR. ROTCH.—I remember two children who impressed me with certain points. One was a baby seen during the period of dentition. The baby was taken sick in the evening with a temperature of 103°F. which was rising, with rapid respirations, the alae nasi working rapidly and the diagnosis of pneumonia was made. By inflating the Eustachian tubes and relieving the congestion of the middle ears the symptoms disappeared. The second case was that of a child whose temperature rose to 104°F.; the child was sleeping quietly and the respirations were normal. A pneumonia was evidenced by percussion and auscultation.

DR. MORSE.—I presented a paper on this same subject at the American Medical Association last year. My experience has led me to believe that disease of the ears is very common in babies and in young children, and that in most of the cases the true condition is not recognized and that the symptoms are attributed to some other cause. Most often, of course, it complicates some disease of the respiratory tract, especially simple cold, but it often occurs in the course of other diseases and is not infrequently primary. In a considerable number of cases the symptoms are latent or are disguised by those of the primary disease. I feel sure that at least one-third of the patients in the Infants' Hospital always, and sometimes two-thirds of them, have inflammation of the ears. Inflammation of the ears is especially common as a complication of pneumonia. It should not be forgotten that a pneumonia and disease of the ear may exist at the same time. I feel very strongly that the frequency of diseases of the ears is not recognized by the profession at large. I think the reason that they were not recognized is because definite symptoms are looked for. Physicians, as a rule, exclude ear trouble without further examination if there is no earache, tenderness over the mastoid or picking at the ears. Earache, however, is very often not present, or if present, the crying is misinterpreted. Tenderness over the mastoid is unusual in acute middle ear disease. Babies will cry anyway if pressure is made over the mastoid. Babies very seldom put their hands to their ears or head when there is disease in the ear and very often do it in other conditions. The only way that a diagnosis of middle ear disease can be made is by the ear speculum.

A CURE OF CHRONIC NEPHRITIS FOLLOWING RENAL DECAPSULATION.

SECOND REPORT.*

BY AUGUSTUS CAILLÉ, M.D.,

New York.

THE patient is a girl seven years of age, who was four and one-half years old at the time of operation.

History prior to operation. At age of two years contracted measles. Two weeks later fell into a tub of scalding water, and received very severe burns of back and legs. About two weeks after that swelling of feet and puffiness of face appeared, followed a little later by ascites. "A well-known physician diagnosed the case as one of acute nephritis, from which she apparently recovered after four weeks. A similar attack, a month later, also ended in apparent recovery. On the occasion of a third attack, which was more severe, with supression of urine of forty-five hours' duration, the child was admitted to the Babies' Wards of the N. Y. Post Graduate Hospital, November 13, 1900. Her case was diagnosticated as subacute nephritis and she was discharged, improved, December 30, 1900. On April 3, 1901, she was readmitted during my service, with all clinical evidence of chronic nephritis; urine scanty and dark, containing albumin, all forms of casts and renal elements, blood and pus. Her eyes were puffy and her abdomen contained fluid. After a course of sweating, dieting, the application of intestinal irrigation, and the administration of diuretics and diaphoretics, she went home improved. Nine months later, on February 1, 1902, I found her again an inmate of the Babies' Wards."

Examination. "She was generally edematous, her heart was markedly enlarged, the apex beat being at the sixth interspace, an inch to the left of the nipple line. The heart sounds were clear, the second sound was accentuated."

Existence of chronic Bright's disease prior to operation. (a) as indicated by symptoms, two and a half years. (b) as known from urine examination, two and a half years.

Operation, February 19, 1902, at Post Graduate Hospital. Child four and one-half years old.

Decapsulation of both kidneys by Dr. G. M. Edebohls.

Anesthetic. Nitrous oxid and ether.

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* Read before the Sixteenth Annual Meeting of the American Pediatric Society, Detroit, Mich., May 31, 1904. First report published in ARCHIVES OF PEDIATRICS, 1902, Vol. XIX., p. 734.

CASE NO. 21. C. B. WEIGHT OF PATIENT, 23 KILOGRAMS.

Operation Feb. 19, 1902.	Quantity of urine in 24 hours.	Specific Gravity.	Total solids in 24 hours.	Urea.	Albumin.	Renal Casts.
Eight examinations before operation, Feb. 6–13, 1902	495 c.c. to 840 c c. Average, 700 c.c.	1010 to 1022. Average, 1017.	Average for 8 days, 27.0 grams daily.	Average for 8 days, 8.5 grams daily.	Average for 8 days, 0.103% daily.	Hyaline casts always. Granular and epitheliated generally. Few pus cells generally, and occasionally a red blood cell and renal element.
Eight examinations immediately after operation, Feb. 21–28, 1902.	330 c.c to 750 c.c. Average, 540 c.c.	1012 to 1029. Average, 1018.	Average for 8 days, 21.56 grams daily.	Average for 8 days, 9.288 grams daily.	Average for 8 days, 0.1% daily.	Same casts as before, but for first few days much more abundant. Also waxy, pus and occasional epitheliated casts. Blood and pus cells about same as before. Occasional renal cells.
Eight examinations made between Mar. 1–22, 1902.	510 c.c. to 1065 c.c. Average, 750 c.c.	1009 to 1032. Average, 1021.	Average for 8 days, 36.72 grams daily.	Average for 8 days, 18 3 grams daily.	Average for 8 days, 0.078% daily.	Large numbers granular casts, fewer hyaline. Nearly every report shows a few renal cells and pus cells.
May 20, 1902.	660 c.c.	1027	41.52 grams.	21.78 grams.	0.075%	Few leukocytes and renal epithelia.
Feb. 4, 1903.	1000 c.c	1012	27.76 grams.	18.0 grams.	0.05%	No casts, no red and no white blood cells. Five to six small epithelial (renal?) cells.
Aug. 11, 1903.	1000 c.c.	1020	46.6 grams.	14.0 grams.	Trace.	Rather frequent hyaline. Rarely an epitheliated hyaline. Rarely a red cell; occasional leukocyte.
Jan. 4, 1904.	1000 c.c.	1019	44.27 grams.	24.0 grams.	Faint trace.	Very rarely a hyaline. Very rarely a red cell. Few leukocytes.

Condition of kidneys at operation. Typical chronic parenchymatous nephritis, the large white kidney, on both sides. "Each kidney measured over four inches (ten centimeters) in length and was three times larger in bulk than normal."

Diagnosis. Right and left chronic parenchymatous nephritis.

Convalescence uneventful. Primary union of both wounds.

Urine examinations were made in large number, at least thirty. In the subjoined table I have averaged eight urine examinations before operation, eight immediately after operation and eight made between ten and thirty days after operation. In addition, I have given all the urine examinations I have been able to make since patient left hospital. The comparison of the various examinations is certainly most instructive.

Examination of urine by Arthur H. Gardner, M.D., April 16, 1904. Urine of C. B., seven years old.

Color—very pale straw.

Specific gravity 1021.

No albumin.

No sugar.

Microscopical examination. No casts.

A few leukocytes and small epithelial cells (perhaps 7-8) in two microscopical fields. The child seems in very good physical condition, although a little pale—but no more so than her brothers and sisters.

She goes to school regularly, plays with the other children, and her parents consider her perfectly well.

History after operation. No more edema, headaches or uremia after discharge from hospital. The patient for a year past has been in perfect health and has taken up her school life.

Result. A cure. Patient's general health all that could be desired, and urine practically normal.

Regarding the indications for operative treatment in acute and chronic nephritis, I quote from my former article as follows: "During my professional career extending now over 30 years, I have made the following observations regarding kidney infection: Nephritis following acute infectious diease in children has a tendency to complete recovery. Children who survive the acute stage but continue to show albumin and renal elements for several months also frequently make a complete recovery. In a certain percentage of cases recovery does not take place. I have records of 7 of my patients who developed nephritis following scarlatina—diphtheria—measles, under my personal observation and who subsequently died of kidney insufficiency. One at the age of 5; one at 6; two at 10; one at 15, and two at the time of the first confinement after marriage at 21 and 22 years of age. In view of the uselessness of medication in chronic nephritis the proposition to treat Bright's disease surgically should be met without prejudice.

From my observations in this case and in other cases which have come under my notice I would not hesitate to advise inspection of the kidneys through lumbar incision in cases in which an acute nephritis not secondary to heart lesions does not clear up in a reasonable time—say 6-8 months—and would furthermore advise splitting of the capsule or decapsulation of one or both kidneys should they appear swollen and enlarged with the hope of preventing an acute nephritis from becoming chronic and incurable. The same procedure is, of course, indicated in acute nephritis with complete suppression of urine. Edebohls claims that his operation is beneficial by reason of an increased blood supply. This is not as yet proven. I believe that some of the virtues of decapsulation of the kidney are due to massage incident to handling of the infected organ.

753 Madison Avenue.

DISCUSSION.

DR. KERLEY.—I should like to ask Dr. Caillé what effect this operation of renal decapsulation would have on the susceptibility of the kidney during an attack of scarlet fever, or other infectious disease.

DR. CAILLÉ.—I cannot answer Dr. Kerley's question. The whole matter of renal decapsulation is so new, and we possess so very little definite knowledge on the subject of the increased susceptibility of the kidney in infectious diseases, such as scarlet fever, that I am unable to give any positive answer. There are quite a large number of children that have been operated upon, but the reports have not as yet been published because the physicians are waiting for results. In the case reported I am convinced that the child has been much benefited by operation, but whether this was due to increased blood supply or to the handling of the organ I do not know. In fact, the small hemorrhages into the tissues may have had some effect in improving the circulation.

DR. PUTNAM.—I would ask Dr. Caillé if this is the only case he has followed.

DR. CAILLÉ.—It is the only case I have studied.

DR. PUTNAM.—Were all the other cases entirely relieved of their symptoms?

DR. CAILLÉ.—When I last saw Dr. Edebohls he was then preparing a paper on renal decapsulation, and out of 80 cases operated upon he reported 10 or 12 absolute ideal cures and 8 or 10 probable cures. These latter were the cases that gave a clear urine almost all of the time with only an occasional trace of albumin.

DR. LA FÉTRA.—The improvement in these cases of renal decapsulation is very difficult to explain. It is certainly not due to an increased blood supply to the cortex of the kidney. Experimental tests of the operation have been made by Hall and Herxheimer in England, and by Van Cott in this country. When at later periods the kidneys have been removed and studied, there has been found a new capsule with no arterial anastomosis, and a tendency for the new capsule to become thicker, and for fibrous bands to project from the capsule into the cortex, thus producing an interstitial nephritis.

Similarly in old cases of renal decapsulation for nephritis a new thick fibrous capsule is formed with no increase of blood supply to the kidney; moreover, there is no regeneration of the damaged cells of the tubules nor of the glomeruli. Relief of tension may explain; but no matter what the explanation the important point is to follow these cases to learn how they behave clinically. Probably a more careful selection of cases for operation can be made, so that decapsulation is practised only in those cases that are of local or bacterial origin, and in those in which there is an increase of tension, as in large white kidney.

DR. CAILLÉ.—Only a few weeks ago I saw a redecapsulation performed on a patient; the first operation had been done two years ago. Both kidneys were operated on for chronic nephritis. Acute uremic symptoms developed which called for the second decapsulation. I saw both kidneys and there was no fibrous change, or fibrous tissue formation at all. After the first decapsulation the kidney was about the same consistency.

DR. FORCHHEIMER.—In a certain number of cases of exophthalmic goitre, splitting the capsule of the thyroid gland brings about normal functional activity of the gland without producing any anatomical changes. A number of cases have been reported in which the benefit was not merely temporary, but the condition was absolutely cured. Whether this was due to a change of tension or to absorption of certain antibodies after the capsule was split, I am not prepared to say. To me this is the only tenable explanation to account for increased functional activity of the kidney following renal decapsulation.

DR. CAILLÉ.—In answer to Dr. Forchheimer's reference to splitting the capsule in exophthalmic goitre, I do not believe that anyone could say that splitting the capsule relieved the tension, although it might be that the bleeding alone might be sufficient to influence it favorably. So far as experience goes, the splitting of the capsule and the handling of the organ which accompanies this operation produces the good results. I believe that the massage of the organ in decapsulation is a very important factor in the relief that follows.

Surgical treatment is only indicated when there is kidney insufficiency. My interest in this was purely a clinical one, and have seen better results from decapsulation than from medication.

THE INFLUENCE OF SUGAR ON FERMENTATIONS IN MILK AND MILK CURDS.

BY H. L. RUSSELL,

Professor of Bacteriology, University of Wisconsin; Director of the State Hygienic Laboratory, Madison, Wis.

[From the Bacteriological Laboratories of the University of Wisconsin.]

Milk is exceedingly prone to undergo certain fermentative changes. Its composition and concentration are such that it affords an excellent medium for the growth of many kinds of bacteria. The most common change to be noted is the souring of the milk, the chemical transformation being a conversion of the milk sugar into lactic acid. As the acidity of the milk increases, the colloidal casein is precipitated and there is formed a more or less friable acid curd. Not infrequently this fermentation is supplanted by abnormal changes in which gas is produced and the curd develops a more or less marked taint. Sometimes digestive changes set in and the milk spoils without the development of much acid. These abnormal changes are by no means uncommon, especially in the summer, when their presence may lead, to material losses for the dairyman, as the milk is spoiled for ordinary uses.

The reason why these peculiar transformations set in is because certain specific fermentative bacteria, for one reason or another, gain the ascendency over the normal lactic acid-producing organisms. Generally these germs are associated with filth and dirt of various kinds, and if the milk is so handled as to permit of the introduction of foreign matter, these forms find it possible to develop rapidly in this rich nutritive medium. If this contamination is considerable, they may outstrip the lactic bacteria in their development, and so gain the ascendency over the normal milk flora, in which case the milk does not sour normally, but forms gas or bad flavors that are more or less pronounced. In securing a milk supply of the best quality, it is necessary to take such precautionary measures as will prevent the infection with these undesirable organisms. Such is the case with the socalled "sanitary" or "certified" milks, the keeping quality of which is dependent upon the exclusion in large measure of all bacterial life.

If a sample of milk is examined bacteriologically just as soon as it is drawn, a considerable number of different species of bacteria will be found in the culture plates. Generally in such a culture, the lactic acid forms will be only sparingly present. If an examination is also made at later intervals, a change will appear in the character of the species. In the course of only a few hours, the lactic species will begin to predominate, and as the milk becomes older, this particular class seems to thrive much more luxuriantly than any of the other species. An examination made when the milk is, say 24 hours old, will under ordinary conditions reveal this type in complete control. Such is the history in a sample of ordinary pure milk. Only when the milk is considerably befouled, will these other miscellaneous forms be able to control the character of the fermentation.

Why is it that this lactic group is able to control the field so thoroughly? Is this class of organisms so much better fitted to thrive in milk, or is their marked development dependent upon certain properties of this medium in which they grow?

One sees manifold cases of this adjustment which is constantly going on between living species and the soil in which they grow. Certain species of plants have gradually acclimated themselves to a characteristic habitat by reason of moisture, light, and soil conditions. In these they thrive. Change these conditions sufficiently and the balance of nature is disturbed. These species dwindle away, their places being taken by other forms.

Any one who has witnessed the drying-up of a lake or marsh through the draining of the same has seen this struggle going on. The distinctively marsh or water-loving plants, like the rushes, reeds and sedges retreat before the changed conditions, their places being taken by the grasses.

These same laws are operative with reference to the distribution of bacterial life. In certain habitats, where the food conditions are most suitable, where the influence of the by-products of the growth of other forms is least felt, there the conditions become most favorable for the development of some certain type. This is the problem to which the bacteriologist must turn his attention if he is to understand the laws of distribution.

With this point in view our studies on milk began. It was assumed as a working hypothesis that the enormous multiplication of lactic forms and the simultaneous disappearance of practically all other species must be due to the influence of some food element or waste product upon the species in question.

The attempt was made to vary the character and composition of milk by submitting samples of fresh milk to dialysis in parchment sacs. In this way the soluble constituents of the milk were removed, as the milk sugar and certain of the ash constituents, while the casein, albumin and part of the ash could not diffuse out. The removal of the sugar was shown to have taken place in two days by means of Fehling's test. When such dialyzed milks were incubated at 37°C., without further treatment, the growth of bacteria was very rapid, but instead of the usual souring change due to the development of lactic acid, these milks invariably underwent a putrefactive decomposition. Tests for indol were positive in all the experiments made, and the fecal odor present left no question as to the formation of skatol and other products of nitrogenous decomposition. Culture plates made from the milk when it was placed in the dialyzer showed a variation in type, but the non-liquefying forms were most abundant. In the dialyzed milks, however, the liquefying forms were greatly increased in number, showing that the conditions had become more favorable for the development of this type in the absence of the sugar.

To confirm this hypothesis, sugars (glucose and saccharose) were added to dialyzed milks. In these experiments, the control samples of dialyzed milks curdled in a few days with the production of a foul odor, the intensity of which was increased by growth at blood heat, while the sugar series soured in two days with no disagreeable odor. Cultures made from these samples showed a large increase in the development of the non-liquefying, lactic acid type. Evidently then the presence of the sugar gives the most favorable conditions for the development of the lactic group and wherever these forms are able to grow and form their characteristic by-products, the putrefactive casein-digesting species are held in subjection.

The inhibitory action of sugar on the liquefaction of gelatin by digesting or proteolytic enzymes is also another expression of this same phenomenon.

Not only were these experiments made with milks which had been subjected to a modification in composition by reason of the dialyzing process but other tests were made on cheddar cheese,* the curds of which were washed in water before putting them to press. In this way the whey was removed from the curds and with it, of course, the milk sugar which is in solution. These cheese were examined at frequent intervals, and it was evident that the "washed" cheese cured more slowly. In the course of a few weeks they began to develop an unpleasant flavor, which became more pronounced as the age increased. The curds which had been most thoroughly washed had the worst flavor. When examined bacteriologically the same condition was found as before, the "washed" cheese revealing a much larger number of liquefying bacteria than the control cheddars.

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* These tests formed an extensive series of experiments on the influence of this treatment in cheesemaking and were made in collaboration with Messrs. Babcock, Hastings and Vivian. This work is reported in detail in Eighteenth Report Wisconsin Agricultural Experiment Station, page 166.

[Cheddar cheese is made by curdling milk with the rennet ferment (essence of pepsin), expressing the whey, and then pressing the curds into a mass which is left to undergo a ripening process.—EDITOR.]

Further experiments were made by adding sugar (saccharose and lactose) to the washed curds. In such cases the addition of sugar prevented the development of putrid flavors and the cheese ripened with the development of the normal cheddar flavor. Bacteriologically these cheese from washed curds to which sugar had been added resembled the ordinary type of cheddar. The development of liquefying forms was held in abeyance in quite the same way that it was in the milks which had been treated in a similar way.

It is apparent from this work on both milk and curd that the nature of the fermentations normally set up in these nutritive media depend very materially upon the composition of the same. Both of them are rich in nitrogen and therefore exceedingly susceptible to bacterial activity. Ordinarily such media would naturally undergo putrefactive changes, but the presence of milk sugar evidently prevents these organisms from reaching their maximum development on account of the acid which is formed by the growth of the lactic bacteria. Where the milk sugar is removed, the lactic bacteria are still capable of growth, but under such conditions, little or no acid is formed, and therefore the conditions do not become so unfavorable for the growth of the nitrogen-decomposing class. The lactic bacteria, therefore, are of importance in the prevention of putrefactive changes in milk by the action which they exert on the milk sugar.

These studies have undoubtedly an important bearing on the feeding of infants. If conditions arise whereby the lactic bacteria are not able to develop, if they are overpowered by the growth of other species, the character of the fermentations produced are materially different. The most important condition that determines the probable type of development is, it seems, the presence of the sugar. It is quite within the limits of possibility that this factor may enter into the distinction between cow's milk and mother's milk. The first is higher in nitrogen and lower in sugar. Hence may not be so suitable for growth of lactic species. The beneficial use of foods consisting largely of carbohydrates, in the treatment of infantile disorders such as summer diarrheas may be an application of this principle that the sugar exerts a protective effect on the character of the fermentations produced.

MADISON, WIS.

Anemia in Children. — Among other causes of anemia G. Carrière (*Le Nord Médical,* October 15, 1903) mentions overfeeding. An excess af alimentation causes gastric stasis and intestinal autointoxication, and resorption of the intestinal poisons destroy the red globules and cause anemia. The author has observed 3 cases in which overfed children were restored to health simply by moderating their diet, without any other treatment. Anemia in children may also be caused by chilling, which is not surprising, as the writer has proved by experimentation that cold induces a marked destruction of red corpuscles. Overtaxing the physical or mental strength is another frequent cause of anemia. The author recommends the usual hygienic measures, and in the way of medication praises the cacodylate of sodium. It is best to use it for a while, beginning with three-drop doses twice a day and increasing a drop at a dose until ten drops are taken twice daily. This may be kept up for eight days, diminished drop by drop until the primary dosage is reached, and a rest of ten days is then taken. Iron treatment may be instituted later.—*Medical Record.*

The Ortol Reaction.—Douglas (*The Lancet,* July 4, 1903) calls attention to the color reaction recently described by Saul in the *British Medical Journal,* which he has employed in a number of cases. It is simply the adding of a few drops of a 1 per cent. solution of an organic compound, orthomethyl-aminophenylsulphate to raw milk or milk which has not been raised above a certain temperature and following it by a drop of weak peroxid of hydrogen (5 volume strength), which produces in a very short time a deep reddish-pink color. When this is carried out on milk that has been heated above the pasteurization point (above 75 C.) or a little higher, this reaction fails, or only a slight brownish tinge is given. As the compound is expensive, Saul advises the use of ortol instead, a substance used in photography, and consisting of the above body mixed with quinol. Douglas has always employed it, and for the sake of convenience calls the test the ortol reaction.—*Journal of the American Medical Association.*

THE RACHITIC HAND.*

BY HENRY KOPLIK, M.D.,

New York.

Some years ago my attention was called to a peculiar manifestation of rachitis which existed in some very marked cases of the disease, and which to my mind might easily have been mistaken for syphilitic disease of the bones had not the history of the case been carefully sifted and considered. In these children the symptoms of rachitis as manifested in the bones were very marked, not necessarily in deformity, but in the distorted growth and deposit of bone, especially of the long bones. I have been accustomed to demonstrate the peculiar condition of the hand which I will now describe as due to rachitis, and as a condition not generally noticed either in the text books or monographs on the subject.

Most of the infants and children in whom the rachitic hand could be demonstrated suffered from marked rachitis, accompanied by pain in the bones to such an extent that one would be apt to think of syphilis; but so different was the picture as compared to that of syphilis, that there could be no doubt as to the real nature of the disease in question. One of these cases I have published in my book with an accompanying figure showing the rachitic hand, and in that article I have laid stress upon the appearances as occurring in the shaft, rather than in the epiphyses of the phalanges. Lately in the transactions of the Society of the Diseases of Children, which was part of the Congress of German Scientists, meeting in Cassel in 1903, Siegert published a notice, with portrait, of the socalled rachitic hand.

Since Wegner's work on the Diseases of the Bones of Young Children, it has been established that in rachitis the bones of the carpus and fingers are drawn into the picture. Wegner described this localization of the rachitic process.

I have had repeated occasion to demonstrate this deformity and it seems to me it has escaped the notice of most writers, with the exception of Sobel, who mentions my description of the condition.

The children in whom this is noticed present nothing peculiar, with the exception of the ordinary rachitic habitus of the most pronounced type. The head, the chest, the extremities all show manifestations of the disease. I show here a portrait of such a hand in a child treated in my hospital service for an intercurrent affection. The history of the case presents nothing peculiar, but for the sake of completeness I include it here.

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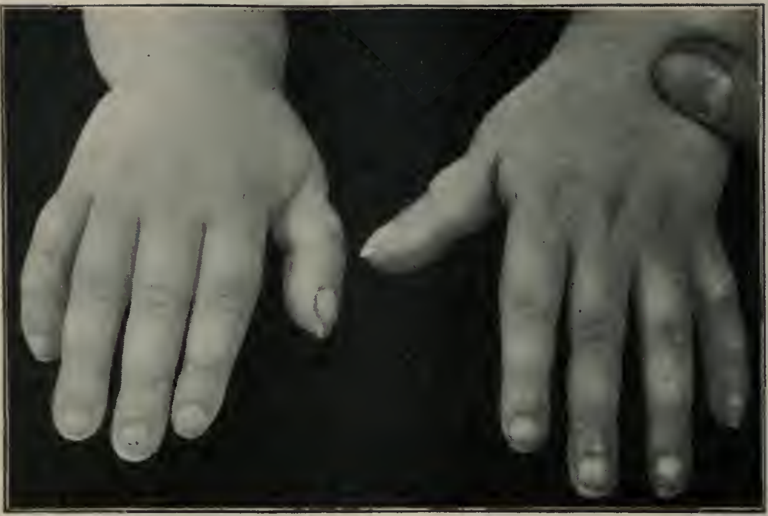
*Read by title before the American Pediatric Society, Detroit, Mich., May 31, 1904.

Male infant, two years of age. *Family History.*—Mother has five other children, all of whom have rachitis. The mother has never aborted. *Previous History.*—There was a difficult labor, head presentation, no instruments were used. The infant was breast-fed for one and a half years, since then has had a generally mixed diet. The child can sit, but cannot stand; is constipated; has had no previous illness, especially none of the exanthematous type.

Present illness began three days ago with a cough, which increased from day to day. No fever, no chill, no cyanosis. Child has lost weight and gradually became worse.

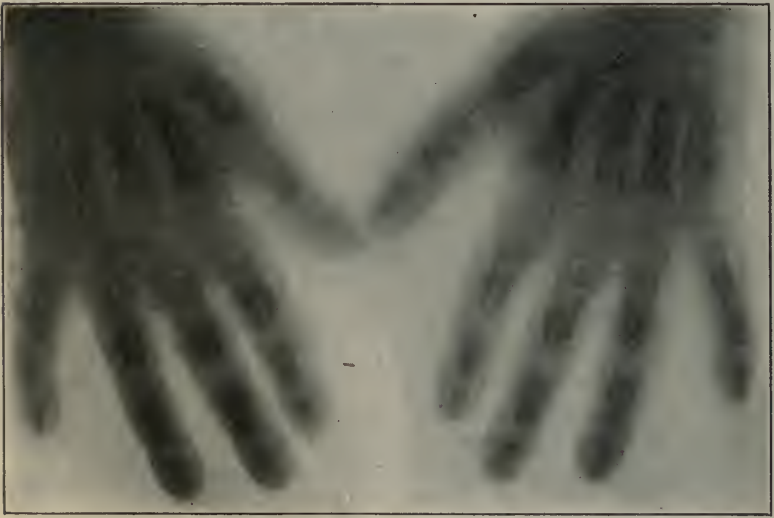
Present Condition.—Fairly well nourished; teeth in diseased condition. Tongue not coated, large submaxillary and sublingual glands. Lymph nodes in the anterior and posterior cervical, posterior occipital, axillary and inguinal regions palpable. Very marked signs of rachitis. The head large and square, epiphyses of all the long bones enlarged. Marked infracture of the clavicle, marked rachitic rosary, with flaring of the lower part of the ribs. The middle of the diaphyses of the phalanges of both hands bowed and thickened, kyphosis of the lower dorsal region of the spine, which is quite flexible. Pigeon breasted chest, lower intercostal spaces drawn in on inspiration. The lungs show a bronchopneumonia in the upper lobe of the right lung, and bronchitis in both. Spleen palpable below the ribs, abdomen prominent, tympanitic, right kidney palpable. The lower extremities, shaft of tibia, and the lower extremities of the bone show signs of marked rachitis. The remainder of the history is not relevant. Child was discharged cured of its pneumonia.

The above history is given simply to show that there was nothing in the case other than the rachitis which could be regarded as a cause of the peculiar condition of the hand. Photographs were taken of the hands and they show very beautifully the bow of the phalanges. An X-ray shows very distinctly the thickening of the phalanges in the same hand. It can be seen by a study of the radiograph that the soft parts are really bowed



RACHITIC HAND, SHOWING BOWING OF THE FINGERS.

by the thickening of the bones of the phalanges and are not the causation of the peculiar conformation of the fingers. In other words, the appearance of the hand is not caused by any fatty tissue which may be present in the fingers. It may be also



X RAY OF RACHITIC HANDS, SHOWING THICKENING OF THE PHALANGEAL SHAFT.

seen that the fingers of this hand are longer and more tapering than is usual in the hand of an infant of this age. This seems to be due to a laxity of ligamentous structure of the joints of the phalanges. By comparing this radiograph with one given by John Poland in his atlas of a child of the same age, it is apparent that the distance between the extremities of the phalanges which make up the joints is greater in the case of the radiograph of the rachitic than of the normal hand. These facts may account also for the peculiar incurvated appearance of the fingers at the situation of the joints.

692 Madison Avenue.

Dyspepsia Intestinalis Acida Lactarum.—Jan Raczynski (*Wien. klin. Wochenschr.,* March 16, 1903) describes this disease of nurslings fed entirely on breast milk, as consisting of restlessness, vomiting, meteorism and diarrhea. The stools contain whitish clumps, as well as green and grass-green lumps. The condition may last for weeks or months and may disappear without treatment. It may interfere with the child's nutrition or with its development. The author goes into detail as to the etiology, laying especial stress upon the chemical changes taking place in the ingested milk. The stools are much more acid than normally and this is due, not to chemical change, but to the excessive growth of the normal intestinal bacteria which is sometimes seen in diseased conditions. Occasional feeding with cow's milk is the most efficient form of treatment.—*New York Medical Journal.*

Subcutaneous Gelatin Injections in Childhood.—Zuppinger (*Wien. klin. Wochenschr.,* December 25, 1902) considers gelatin injections in the treatment of hemorrhage from any source, one of the greatest boons of modern medicine. Where from 50 per cent. to 100 per cent. of all cases of internal hemorrhage in children used to die on account of the lack of an efficient hemostasis very few need do so now since the introduction of gelatin. He briefly reports 3 cases, in which the bleeding was so severe as to leave the patients almost bloodless. Hypodermic injections of from 1 per cent. to 5 per cent. solutions of gelatin in varying quantities were used and all of them recovered. Two were cases of scurvy, the third of purpura hemorrhagica. He has also tried it in melena neonatorum, epistaxis, pulmonary hemorrhage, etc., and always with the same result. He warns against the use of commercial gelatin, as this was often found to contain tetanus bacilli. If carefully sterilized few unpleasant after-effects will be noted.—*American Medicine.*

Clinical Memoranda.

TRACHEAL OBSTRUCTION FROM A TUMOR IN A THREE-YEAR-OLD BOY.

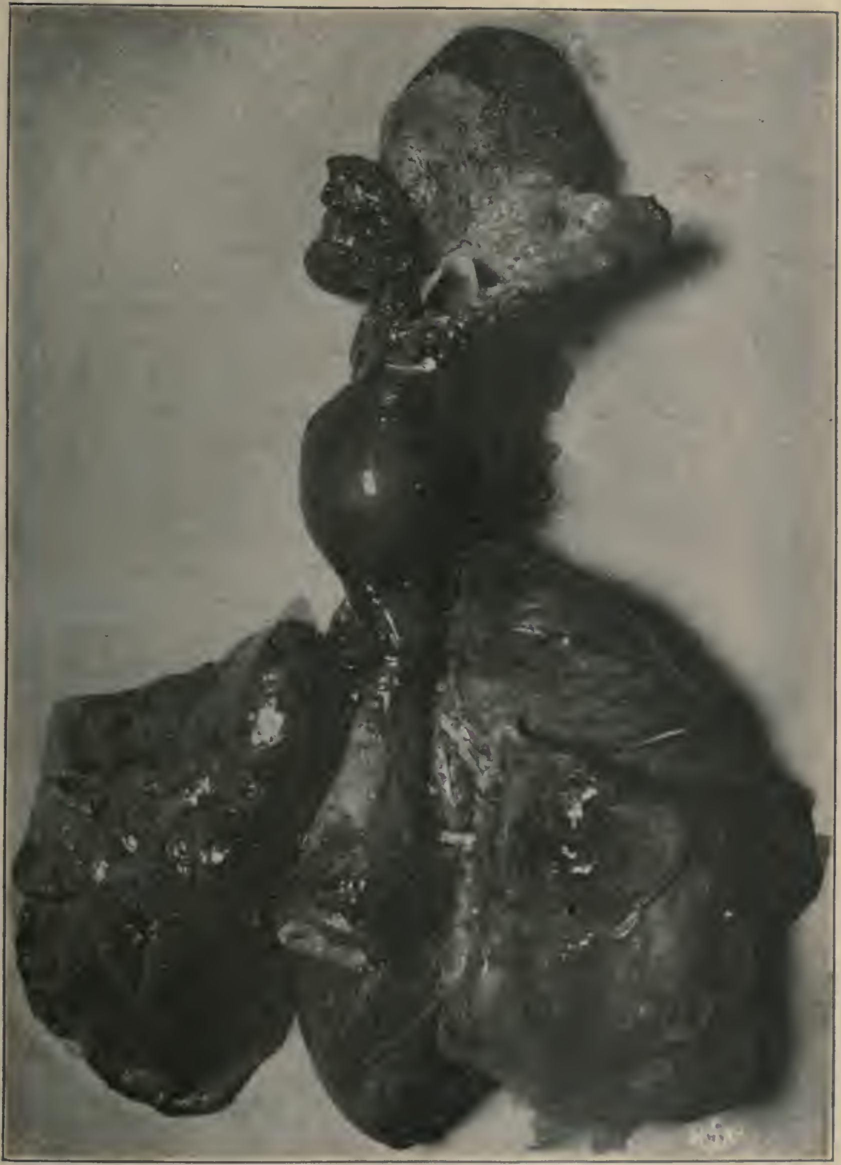
BY DAVID BOVAIRD, JR., M.D.,
New York.

L. S., aged two years and eleven months, was returned to the Foundling Hospital on August 15, 1903. There was no history of previous illness, all that was known of him being that for some weeks he had had a difficulty in breathing which had steadily grown worse.

Examination.—A rather poorly nourished boy of fair size. There are some slight signs of rachitis in the thorax and extremities. The mouth and pharynx are normal. The chest is poorly developed, the lungs and heart are normal. The abdomen is greatly distended and tympanitic. The liver and spleen are normal. The subcutaneous lymph nodes are slightly enlarged. The temperature and pulse are normal. The striking thing about the child is his respiration. This is labored and accompanied with considerable stridor. The difficulty appears in both inspiration and expiration, but especially in the latter. With every expiration there is a bulging of both sides of the neck, apparently symmetrical. The voice is clear and the child readily swallows all the food offered him. The external examination of the neck reveals nothing abnormal.

The boy was kept under observation for a week. During this time there was no material change in his condition. It was, however, noted that the dyspnea varied greatly from time to time. There were intervals during the day in which he breathed with comparative ease. During the night, on the other hand, the dyspnea became very severe. There was no cyanosis, no congestion of the face.

On the night of the 22d a sharp rise of temperature occurred. The following morning it was determined to attempt an examination under an anesthetic. Ether was administered. This was taken very badly. An attempt to introduce an intubation tube failed because of obstruction. During the attempt respiration



PHOTOGRAPH OF A FIBRO-FATTY TUMOR LYING BETWEEN TRACHEA AND ESOPHAGUS. NOTE THE DILATED AND HYPERTROPHIED ESOPHAGUS EXTENDING DIRECTLY DOWN FROM THE TUMOR, ITS CUT LOWER END LYING ON THE POSTERIOR SURFACE OF THE HEART: ABOVE, THE ESOPHAGUS COVERS THE POSTERIOR ASPECT OF THE TUMOR.

ceased and a high tracheotomy was hurriedly done, but after the introduction of the tube all efforts to revive the child failed and he died on the table.

The results of the *autopsy* were as follows:—The body was emaciated, length 87 cm. Cranium, normal. Teeth, normal. Thorax, a little flattened laterally. Epiphyses, rather large. Nasopharynx, moderate adenoid growth. Pharynx, normal. Larynx, normal, except for tracheotomy wounds. Trachea and bronchi, normal. Cervical lymph nodes, somewhat enlarged. Pleuræ, normal. Lungs, small areas of collapse posteriorly. Mediastinal lymph nodes, markedly enlarged, not tuberculous. Heart, normal. Liver, several minute whitish dots on the surface. These are slightly depressed and show a radiate contracture, like a cicatrix. They extend slightly into the substance of the organ. Spleen, one small tubercle, similar to those in the liver, seen upon the surface. Several small whitish dots looking like miliary tubercles seen on section. Kidneys, normal. Stomach, cardiac end and fundus greatly hypertrophied, pylorus normal. Small intestine, congested and coated with mucus. Large intestine, the same. Mesenteric lymph nodes, enlarged, section light yellow, none distinctly tuberculous. Bladder, normal. Brain, not examined.

Just below the larynx is a large globular tumor, lying between the trachea and esophagus and connected with both. On opening the esophagus from behind the posterior surface of the tumor is found to be covered by the anterior wall of the esophagus, which is greatly dilated at this point; the esophagus is found to be greatly dilated at its lowermost part, readily admitting the tip of the index finger, the walls at this part are also greatly hypertrophied, being at least twice the normal thickness. The tumor mass is found to be rather soft to the touch. The trachea in front of it is normal. The diameter of the tumor on section is 45 mm. It has the appearance of a fibroma containing some fatty tissue. The tumor could be readily separated from the trachea in front or the esophagus behind. In situ the tumor lay in such a position that its lower portion was engaged in the space between the sternum and the vertebral column. It is remarkable, in view of this fact, that the trachea showed no evidence of compression.

The microscopical examination of the tumor showed it to consist of fibrous and fatty tissue with a few bands of striated muscle fibres. The small nodules in the liver and spleen had the characteristic structure of miliary tubercles, a necrotic centre, a zone of infiltration with small round cells and giant cells, the whole surrounded by a thick capsule of fibrous tissue. Tubercle bacilli were not demonstrated in them and it is, therefore, impossible to say that they were not syphilitic gummata.

The interest of the case lies in the presence of the tumor in such an unusual situation. It is remarkable that, although the tumor had pressed upon the trachea to the extent of producing severe dyspnea during life, no evidence of compression of the trachea could be found after it had been removed from the body. It is also very noteworthy that, although the esophagus had been equally compressed, it had dilated so easily that during life there had not been noted the slightest difficulty in swallowing. The hypertrophy of the lower end of the esophagus and the cardiac extremity of the stomach are difficult to understand or explain. There was certainly no obstruction beyond the parts involved in the hypertrophy, and the pyloric portion of the stomach did not participate in the process. The writer can only suggest the pure hypothesis that the pressure upon the esophagus above had in some way produced efforts at regurgitation and these being opposed by the pressure of the mass above, the dilatation and hypertrophy had resulted. The hypothesis has no support in any previous experience, nor has inquiry among the pathologists of the city resulted in any information bearing on the subject.

An Antenatal Case of Measles. — J. R. Gibson (*The Lancet,* October 31, 1903) reports the case of a woman attended in a third and normal confinement. The nurse when washing the child called attention to some dull red spots on the buttocks. A suspicion was entertained of a syphilid, but no opinion was expressed, as the two previous children were very healthy and the character of the parents was above reproach. On the next morning the uncertainty was cleared up, for the author found the child covered with a typical measles rash and suffering from suffusion of the eyes, nasal catarrh, and bronchitis, and, in short, all the cardinal symptoms of measles. The child recovered in the usual period and without any medicinal treatment. The temperature ranged from 99° to 100° F. The mother made an uninterrupted recovery and showed not a single symptom of measles. When the baby was eight months old the other two children took the measles but the baby did not. The mother had had measles when a child.—*Journal American Medical Association.*

A CASE OF PROBABLE CONTAGION IN PNEUMONIA.

BY ANDREW B. YARD, M.D.,

Clinical Assistant in Pediatrics at the Vanderbilt Clinic, New York.

CASE I.—John J. M., aged eighteen months, born in New York of Irish parents. *Family History.*—Father and mother both living. Have four other children living; one has epilepsy; the others are well. All have had pneumonia at some time in their lives. Father has rheumatism. No history of tuberculosis.

Previous History.—Born after instrumental delivery. No asphyxia, and child perfectly healthy at birth. When about three days old there developed a furuncle over left clavicle, which healed in about a week. Otherwise has always been well.

Present History.—For about three weeks preceding present illness had had some diarrhea and slight cough. On May 15th was taken ill with fever and loss of appetite. Seen for the first time on May 16th, when he had a dry cough, short grunting respiration, and looked sick and apathetic. There were many large and small mucous râles all over both sides of the chest, front and back. Over small area, about two inches in diameter situated just below and external to the angle of the left scapula, there were loud voice and harsh breathing, with high pitched expiration. Feeling of resistance on percussion, but no actual dullness. Temperature 102°F.; pulse 150; respiration 70.

Next day, May 17th, the râles had entirely disappeared. Harsh voice and breathing more distinct. Some dullness over same area. Temperature 104°F.; pulse 150; respiration 80.

On May 18th signs of consolidation appeared near angle of right scapula. Consolidation on left as before; no râles anywhere. Condition continued about the same until May 22d, the eighth day of the disease, when the temperature dropped in twenty-four hours from 103.4°F. to 98.6°F., and child made a rapid recovery with almost immediate resolution.

CASE II.—B. M., thirty-six years old. Mother of the patient mentioned above; on the afternoon of May 24th had slight chill, with sharp inspiratory pain over right shoulder, back, and chest. Some nausea and headache; occasional cough. Slight dullness and loud voice at angle of left scapula; similar signs lower down in right axillary line, and at left base near spine. No râles anywhere. Temperature 102°F.; pulse 120; respiration 40.

Next day, May 25th, temperature not over 101°F. Consolidation present as before, but with distinct pleuritic friction sounds over solid areas. On the third day, May 26th, the temperature had risen to 104°F. Small area of consolidation at *right* base. Marked prostration. By the fifth day, May 28th, there were well-marked friction sounds all over lower right side, and some in left axilla. Moist râles at right base, near spine.

On the sixth day, May 29th, the temperature fell to 101.6°F., with some pleuritic râles below right clavicle, and moist râles at base.

Seventh day, May 30th, temperature 98.4°F., no consolidation. Many moist râles posteriorly on right side.

Repeated bacteriological examinations showed pure pneumococcus in both cases, the culture being taken from sputum of mother, and from pharynx of child immediately after coughing.

While the age of the child, the preceding bronchitis, and the disseminated character of the consolidation would rather favor a diagnosis of bronchopneumonia, yet the course of the disease, with a sustained high temperature and no intermissions, terminating by a distinct crisis on the eighth day, with prompt and complete resolution, and the rapid recovery, all point toward lobar pneumonia.

In the case of the mother there seemed to be a tendency to run a mild course, with a temperature near 102°F., and added to this an extensive dry pleurisy of moderate severity. The fall of temperature on the sixth day probably marked the true crisis of the pneumonia, an exacerbation of the pleurisy at that time keeping the temperature up until the following day.

The child was cared for during its illness by its mother, who was its only nurse and who was with the baby constantly. While there is usually a large element of doubt as to the actual transmission of pneumonia from one individual to another, it seems fairly probable that this is a case of true contagion.

28 West 105th Street.

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THE TREATMENT OF INFANTILE SYPHILIS.

When the mother or father is known to be syphilitic, treatment should be begun as soon as pregnancy is determined. A mild mercurial and iodid treatment of the mother not only interferes in no way with the course of the gestation, but is our best guarantee for the viability of the child and for its future cure.

If there has been no opportunity for antenatal treatment, it should be begun immediately after birth under the above circumstances, even if the child at the moment shows no trace of the hereditary taint. If it is breast-nourished, two courses are open to us. The specific medication can be administered to the mother, to reach the child through the milk, or it can be given directly to the infant itself.

As regards the first method, it has been doubted whether mercury is excreted in the milk, though the iodids undoubtedly are. Nevertheless, practical experience shows that syphilitic infants thus treated do improve and recover; and since the mother, though she may show no signs of the disease, is immune to a fresh infection, she is undoubtedly syphilitic, and will therefore be benefited by treatment. My first care, therefore, is to put the mother of the child on the approved treatment for her disease.

The heredo-syphilitic child, however, almost always requires more intensive medication than can be gotten in this way alone. The hypodermatic administration of mercury, the method of election for adults, is too severe and too troublesome for infants; I have used it in only a few of the worst cases, when other methods were too slow. Oral administration, also, is undesirable as a rule; the infantile gastro-intestinal tract is readily seriously deranged, and we may easily do the patient more harm than good. I limit medication by this method to the sustentation of other measures when required by the administration of mercury with chalk in ¼ to 1 grain doses three times a day. This preparation is itself non-irritating and anti-diarrheal, and most infants take it with benefit.

The infantile skin, being extremely delicate and more absorptive than that of adults, affords a ready avenue for the introduction of the specific drug into the system. Inunctions of the ordinary type are inapplicable, since they are almost certain to cause troublesome inflammatory reaction and eczema. Nor are they required. The mere application of the mercurial in suitable vehicle to the skin suffices to occasion cutaneous and respiratory absorption in amount sufficient for therapeutic effect. If the case is a mild one half a dram of white precipitate ointment made with lanoline can be spread on a cloth, worn next to the skin under the belly-band, and changed twice daily. A varying proportion of ordinary mercurial ointment can be added if therapeutic action seems too slow; and in children one year old the pure mercurial ointment may be used. I do not find that the newer mercurial preparations so extensively advocated of late offer any advantages of importance.

For severer cases of infantile syphilis, and more especially those with extensive dermal lesions, I prefer the mercurial baths. Ten to twenty grains of the bichlorid are dissolved in an ordinary wooden wash tub of warm water; the child is immersed therein once or twice a day, care being taken that none of the fluid reaches the face, for ten or fifteen minutes. In a few recent cases I have used sublamin, which is as effective and less irritant, in the place of the corrosive chlorid; half a dram may be used for each bath. It has been claimed that only a local effect can be expected from these baths; but the results show that it is a perfectly effective and reliable means of general treatment.

The iodids are required, of course, in the later stages of infantile syphilis. If the child is still nursing they can be administered through the mother's milk; if not, they must be given directly to the infant, by mouth. Fortunately children stand the iodid of sodium well, and as large doses as 15 or 20 grains three times daily can readily be administered.

Local lesions can be to a large extent prevented by scrupulous cleanliness and careful treatment of any inflammatory conditions that may appear. Proper bathing; care of the mouth and nares, with the use of a tannin-glycerin mouth wash; avoidance of irritation from the excreta, with the free use of a starch or other bland powder; these are essential parts of the treatment of every case of infantile syphilis. Nitrate of silver, 10 grains to the ounce, for mucus patches, and a 10 per cent. solution of the oleate of mercury in oleic acid for the nose are effective. For condylomata and moist papules I use calomel freely, usually diluted with an equal amount of powdered starch. This powder is an excellent local application for any of the dermal lesions that require special attention, and particularly for the vesicular and pustular ones after evacuation of their fluid, and for ulcerations. It is usually better for the infantile skin than the various mercurial ointments.

As regards the length of time for which treatment should be continued there is no certain rule. It should be begun as early as possible; before birth, as I have said, if the presence of luetic contamination is known. It should be conducted exactly as in the acquired form of the disease, with intermissions for three years, and as long thereafter as symptoms persist. After one year of entire freedom from any symptoms of the disease, treatment may be stopped; but the patient should be kept under observation for a number of years thereafter, and a vigorous course of treatment instituted immediately upon the appearance of any signs of a recrudescence of the disease.

William S. Gottheil.

THE VISIT OF PROF. DR. ESCHERICH.

American pediatrists have recently been honored with a visit, all too short, from one of the world's foremost pediatrists, Prof. Dr. Theodor Escherich, of the University of Vienna. By invitation he delivered an address before the Congress of Arts and Sciences at St. Louis, September 21, on "Present Problems in Pediatrics." An abstract of the address, which was delivered in German, will appear in the November number of Archives of Pediatrics.

Prof. Escherich is an honorary member of the American Pediatric Society, and it was a great pleasure for a number of its members, as well as for some of his old pupils, to welcome him to this country. We hope that this brief visit is merely the forerunner of another and longer stay.

By the courtesy of Prof. Escherich the Archives of Pediatrics will in the future contain reports of the transactions of the Vienna Pediatric Society.

Bibliography.

Cleft Palate and Hare Lip. By Edmund Owen, M. B., F. R. C. S., Surgeon-in-Chief to the French Hospital, Consulting Surgeon to St. Mary's Hospital, and to the Hospital for Sick Children, Great Ormond Street, London. Crown 8vo., pp. 111, Illustrations 15. London, 1904. Baillière, Tindall & Cox. Price, 2 shillings, 6 pence.

This handy volume is one of the Medical Monograph series. The chapter on development of palate and lip gives the embryological relationship of cleft palate and hare lip in a concise manner. Although tersely put, the enumeration of the points of interest is more complete and satisfactory than is to be found in works of greater pretence. The remarks on material and assistants refer to the author's individual experience and observation, and for this reason many appliances and recommendations of value in the opinion of other operators have not been considered. This portion of the work refers extensively to many conditions upon which the success of any delicate surgical undertaking depends. The paragraphs bearing on the preparation for operation refer chiefly to the care and feeding of children in poor condition. The observations are too general to be of much value in an individual case. There are some very valuable directions bearing on the preparation of the mouth and pharynx before operation. The conditions referred to are frequently not given due attention. Most of the advantages of early operation are mentioned.

The larger portion of the space supposed to treat of this subject, however, is devoted to the history of operative treatment and to the care of feeble infants unsuitable for radical operation. The section on the earlier operation is devoted to a report of an early case successfully operated on and remarks corroborating Brophy's statements and experience. Views held by the author and the essential points of the operation after infancy are contained in the following chapter. The statement is made that after division of the tensor palati repair takes place much as in the case of tenorrhaphy of the tendo Achillis in club foot, contrary to Brophy's assertion. The analogy, as far as division is concerned, may be conceded, but just how the divided ends of the tensor palati are immobilized in the after treatment is not mentioned.

It will hardly be urged, as the next paragraph suggests, that although tendon might heal muscle would not, for the tensor palati after passing the hamular process contains no striped muscle fibres, and when divided is as a severed tendon without immobilizing after treatment. Any muscle fibres divided are of the other muscles of the soft palate.

In the last few pages several good hare lip operations are mentioned, with remarks bearing on the author's experience and the essentials for success. The work would be improved by a larger number of illustrations. The book is not only worth reading by the beginner and by those who wish to become familiar with the leading features of the subject, but it is also of value to those of greater experience because of the author's personal observations and suggestions not found so completely in other works.

The Summer Diarrheas of Infants. Their Etiology, Pathology and Treatment. By **H. Illoway, M.D.** 12mo., pp. 150. New York: E. R. Pelton. 1904. Price, $1.00.

Under the three headings of Heat Stroke, Summer Complaint and Cholera Infantum, the author aims to group all cases of Summer Diarrhea. The substance of the book is made up largely by extracts from the author's previous contributions to these subjects.

As regards Etiology the heat of summer is considered the only cause, affecting various infants in different ways so as to produce Heat Stroke in one, Vomiting and Diarrhea in another, and Cholera Infantum in a third.

The best parts of the book are those that relate to treatment. The cold, wet pack and dilute hydrochloric acid together with careful feeding are the author's main reliance in Heat Stroke and Summer Complaint. In Cholera Infantum which is properly considered to be a rare affection, calomel, blisters, the wet pack and hypodermatoclysis, are recommended; the food advised in these cases is trophonine or liquid peptonoids.

The suggestions in regard to Heat Stroke are very valuable; undoubtedly there are very many such cases unrecognized. Not all cases of Summer Diarrhea, however, have high temperatures; the worst cases to treat are those with no fever, and in these the wet pack, unfortunately, is not well borne.

Current Literature.

PATHOLOGY.

Pollard, Charles: A Case of Infection with Friedländer's Pneumobacillus Resulting in Necrosis of the Kidney. (*The Birmingham Medical Review*, April, 1904, p. 247.)

An infant eighteen months old, after being indisposed for eight weeks, with symptoms of a general cold, became acutely ill, with a temperature of 103°F. There was a faint systolic murmur, a cloud of albumin in the urine, and severe herpes of the vulva. A week later there was great dyspnea and the pulse extremely rapid. The diagnosis lay between ulcerative endocarditis and pneumonia. In a few days signs of pericarditis and of pneumonia were present.

Next the legs and upper abdomen began to swell, due to thrombosis of their veins which felt like whip cords. There was some extravasation of blood around the distended veins on the abdomen and thighs.

About one month from the acute onset a hard lump was felt in the right iliac region; it was hard, fixed and resonance could be detected behind it. The liver could be made out as distinct and above it. Two weeks later an aspirating needle drew pus from the swelling; on examination it gave a pure culture of Friedländer's pneumobacillus. Blood from the ear previously examined for streptococci yielded a negative result. Later this abscess, opened and drained, proved to be due to necrosis and suppuration of the right kidney.

Iovane, A., and Chiarolanza, R.: The Transmission of Infection from the Mother through the Placenta. (*La Pediatria*, March, 1904, p. 158.)

In this preliminary communication, the authors give the results of certain experiments with the bacterium coli and with the pneumococcus, as regards their transmittability through the placenta of pregnant animals. They found that the placenta is endowed with a special property, in virtue of which everything that passes from the maternal blood into that of the offspring is modified both in quantity and quality. This influence is operative not only in the case of the proteids, salts and other normal products of the metabolism of the mother, but also in case of toxic substances which may reach the barrier represented by the placenta. The tissues of the fetus also present a very marked bactericidal power, and it is for this reason that bacteria which have passed through the placenta may not be found in the organs of the fetus. In order to find a germ in the fetus which has been inoculated into the mother, it is necessary, therefore, that the infection be very grave, for the microbe must overcome the barrier of the placenta, and the resistance of the fetal tissues. In accordance with this, the author found that in both rabbits and guinea-pigs a very severe septicemia must be produced in the mother, in order to cause the microbes to pass through the placenta and to be found circulating in the fetal blood. A severe infection which causes the death of the mother may produce an abortion and may kill the offspring, without involving a penetration of the germs into the latter's tissue.

The placenta cannot be traversed by bacteria, unless special conditions be observed in the experiment, such as the injection of infectious material directly into the veins, or into the peritoneum, and not merely under the skin. If the last-named method be adopted the placenta is not easily penetrated.

Meynier, E.: A Case of Sublingual Tumor with an Abundant Eosinophilia in the Growth. (*Riv. di Clin. Pediatr.*, 1904, No. 2.)

The author found, on examining a "sublingual growth" from an infant, that a very large number of eosinophile cells were contained in the tumor. These cells were irregularly distributed and seemed to be grouped in isolated masses. In the ulcerating part of the growth these cells were completely absent, but a number of cocci, most of which were resistant to Gram, were found in this region.

Crisafi: The Iodophile and Glycosuric Reaction in Children with Whooping-cough. (*Il Morgagni*, 1903, No. 10.)

The author found that the iodophile reaction occurred very markedly in 80 per cent. of cases of whooping-cough. The iodophile granules were found in varying numbers, chiefly in the polynuclear leukocytes; less frequently in the eosinophiles, and rarely in the lymphocytes. The iodophile granules differed essentially from the eosinophile. He found that glycosuria was a very rare phenomenon in whooping-cough.

Le Deuta, A.: Sarcomata of the Vagina in Childhood. (*La Presse Médicale*, May 18, 1904, p. 321.)

The writer cites various instances reported by Veit, Brown, Strassman and others, and gives the following case in detail:—It refers to a little girl of three and one-half years with no antecedent history of importance with the exception that the maternal grandmother died at fifty-four of gastric carcinoma. At the age of three years the child had a fall, landing on its stomach. A month later, the mother noticed a small brown mass presenting at the vulva. The mass was glossy, spongy and friable with a slight bloody secretion. It was nonadherent to the vaginal wall. In the course of two months, there was absolute retention of urine due to mechanical pressure with pain dependent thereon. Examination of the vaginal curettings showed an extremely vascular soft fibroma, diagnosed as absolutely benign. Laparotomy was performed, and an enormous tumor mass was seen reaching from the pelvis to the umbilicus. The uterus, adnexa and upper part of the tumor were removed; the most accessible polypous growths were removed through an anterior vaginal incision. The upper portion was sutured and drained, the posterior vaginal wall remained intact, thus separating this cavity from that of the general peritoneum. Recurrence, however, seemed inevitable and, although no peritonitis developed, there was absorption of the infectious material, and the child died in three days, the immediate cause being pulmonary congestion. The gross appearance of the tumor mass showed enormous hypertrophy of the vagina, uterus and adnexa with cystic degeneration of the ovaries. Histologically, the vaginal tumor was essentially composed of developing sarcomatous tissue with some myxomatous degeneration. The fragments showed developing and anastomosing cells with some well-developed connective tissue.

The case is similar to many already reported with the exception that there was entire absence of striate muscular fibres, which is rather against Cohnheim's theory of congenital teratomata.

Nathan, Felix: The Relation of Pleurisy with Serous Effusion to Tuberculosis in Children. (*Archiv. f. Kinderheilk.*, Vol. xxxviii., 1904, p. 183.)

In the *Leyden-Festschrift* Baginsky briefly described 5 cases of serous pleurisy which occurred in the hospital. The direct examination of the exudate as well as cultures and animal experiment failed to show an etiological relationship between serous pleurisy and tuberculosis. Professor Baginsky concluded that pleurisy in children is by no means so closely related to tuberculosis as many writers suppose.

Continuing this investigation Nathan utilized the abundant hospital material at his command. The results of the investigation show that only in a small number of cases can a connection between pleurisy and tuberculosis be traced. These findings are in accord with the view expressed by Baginsky.

MEDICINE.

Stamm, Carl: Pyloric Stenosis in Infants. (*Archiv. f. Kinderheilk.*, Vol. xxxviii., 1904, p. 175.)

Pyloric stenosis is of special interest for the following reasons:

(1) The clinical picture is not always in keeping with the anatomical findings characteristic of this condition.

(2) The affection is classed as congenital, although it is frequently not noted until several weeks or months after birth.

(3) The prognosis is, by some authors, considered to be unfavorable, surgical intervention promising the only chance of recovery; others condemn operative treatment and counsel palliative and dietetic measures.

These discrepancies are due to the fact that various diseases presenting similar symptoms have been classed together. Mention is made of the literature of this subject.

Two cases occurring in infants are reported; both were breastfed for a certain period and vomiting followed a change to artificial nourishment. In 1 case a small resistant mass was palpable 2 or 3 cm. above the umbilicus. Under dietetic treatment both patients recovered.

Discussing etiology the writer says that errors of diet cannot always be regarded as causative. In some instances a hereditary tendency exists. Stamm mentions the occurrence of pyloric stenosis in a family of four children, three of whom died.

Some claim that stenosis of the pylorus exists, others believe that the condition is functional and dependent upon spasm. The latter view is shared by the writer.

Dukelsky, N.: A New Symptom of Rickets. (*Wratchebnaja Gazeta*, 1903, No. 12.)

Dukelsky describes a new sign which he found in 9 cases of rickets. He calls the phenomenon "polypnea," meaning "rapid breathing." This frequency of respiration in rickets may rise to 118 per minute, though usually averaging 56-80. The causes of this polypnea are: (1) The presence of carbonic acid in excess, resulting in irritation of the respiratory centre, and (2) the smaller capacity of the thorax, as well as (3) the higher excitability of the central nervous system.

With the subsidence of the rachitic condition, the polypnea also gradually tends toward improvement.

Aguilar Jordan, D. J.: Some Clinical Peculiarities of Malaria in Children. (*Archiv. de Gine., Obstetr. y Pediatr.*, Vol. xvi., No. 12, p. 392.)

The author analyzes the clinical peculiarities of malaria in infancy and childhood, as compared to the manifestations of this disease in adults. It may be asserted that, in virtue of the special resistance and capacity for reaction of the child's organism against the parasite of malaria, the infection with this agent in children does not take the same form as in adults. The variability of the symptoms of malaria in children is such, that we cannot expect the occurrence of those classical features of malaria which render the diagnosis easy in adults. Instead of the three stages of chills, fever and sweating, we have in the child, either a complete absence of chills or the substitution of convulsion; the fever is usually of longer duration in children than in adults, and the sweating may be completely absent, or is usually very slight. The variations in the periodicity of the attacks in children are very marked. It is common to see one attack of fever at noon, another in the early morning of the next day, a third in the evening, during the night, etc. This is in great contrast to the exact recurrence of the malarial attack at the same hour in adults. As regards the type of fever in children, the remittent or subcontinuous type is more common than the intermittent, and there is a type which does not correspond to any form, known as the "ataxic type or Ferreira." In this type the fever, which lasts for a considerable time, does not show any definite form, but occurs in the shape of exacerbations which are repeated at different hours. Moncorvo has termed this form a "thermic arhythmia." Another form is the acute apyretic type which is characterized usually by catarrhal symptoms of the intestines, a coated tongue, loss of appetite, constipation, diarrhea, meteorism, malaise, languor, etc. Some children complain of erratic pains in the lower limbs, the arms, and the abdomen. The abnormal larvated and pernicious forms present a number of clinical types, but in these the increased size of the liver and the spleen are of diagnostic value.

Moizard et Grenet: Two Observations of Acute Miliary Tuberculosis of the Hemorrhagic Form. (*Annales de Méd. et Chir. Infant,* January 15, 1904, p. 47.)

CASE I.—A male infant, two and one-half years old, born at term and with no tubercular history, developed convulsions shortly after birth, had bronchitis at three months, and at three years a severe attack of measles with cough and rapid loss of flesh and strength. The child grew very pale, showed signs of rachitis and of beginning consolidation at the pulmonary apices. The cervical, axillary and inguinal glands could be palpated. There were frequent slightly blood-stained stools. The liver and spleen were both enlarged. The general condition grew progressively worse with death four days after first coming under notice. At autopsy every organ, including the heart and excepting only the pancreas, stomach and bladder, were studded with miliary tubercles. In many places caseous degeneration had taken place. The intestine showed numerous ulcers, and the large intestine, dilated and of a dark red color, was filled with blood of the consistence and color of pitch.

CASE II.—This occurred in a child of fourteen years with no family or previous personal history of note. For eight days before coming under notice there was anorexia, diarrhea, restlessness and loss of flesh and strength. In addition to these symptoms, examination showed severe dyspnea, rapid and irregular pulse, coated tongue, bile-stained conjunctivæ. On the lower extremities, and less marked on the upper, there was a purpuric eruption consisting of petechial and small ecchymotic spots, symmetrically disposed, and confluent on the trunk. The liver and spleen were tender and the percussion areas greatly increased. The eruption became more and more confluent, the jaundice and diarrhea increased, with a rising temperature, increased dyspnea and death three days after coming under observation. A specimen of blood taken the day before death gave coagulation in eight minutes, 5,212,000 red cells and 8,000 white corpuscles. At autopsy the lungs were infiltrated with miliary tubercles. The liver was fatty and weighed 1,070 grams. The spleen was enormous, weighing 478 grams, friable and congested. The colon showed a small ulceration. In the 1 case, an abundant intestinal hemorrhage seemed to be the terminal symptom of a generalized tuberculosis; in the second, a confluent purpura localized in the skin.

Tugendreich, G.: Report upon Urobilinuria in Children. (*Archiv. f. Kinderheilk.*, Vol. xxxviii., 1904, p. 203.)

The writer refers to the conclusion reached by Labbé that urobilinuria is almost constantly present in diphtheria in childhood, whereas it is rare in scarlet fever. The diagnostic value of this observation is clear.

Tugendreich's investigation included 11 cases of scarlatina and 6 of diphtheria. The urine of these cases was examined periodically, during the greater part of the disease.

The urine of normal children was found to be qualitatively negative for urobilin.

Ninety per cent. of the cases of scarlatina showed marked urobilinuria. About 7 per cent. of the cases of diphtheria showed slight urobilinuria. These results, which agree with those of other workers, are so very striking that they can be utilized for diagnostic purposes. In 7 cases of scarlatina there was noted a decided relationship between the temperature and the degree of urobilinuria.

Carbonell y Soles, F.: Infections of Umbilical Origin in the Newly-Born. (*Archiv. de Gine., Obstetr. y Pediatr.*, Vol. xvi., No. 22, p. 491.)

Whenever fever occurs in the first week of life, the physician must be careful to examine the stump of the cord or the cicatrix in order to determine whether an umbilical infection exists. The beginning of umbilical infection is characterized by a slight swelling and tenderness of the stump of the cord together with some redness in the edema of the surrounding parts and by a disagreeable odor of the affected cord. The child becomes feverish and may be seized with convulsions. The fever, and the other general symptoms are often more marked than might be expected from the slight local changes, owing to the fact that the organism of the newly-born reacts so readily with fever against infection. In some cases septic absorption may go on from the cord, with scarcely any inflammatory signs at the point of entrance. It is very important, therefore, that the cord be carefully watched, and that the dressing should include the use of astringent and antiseptic powders such as dermatol and salol. When infection occurs, the stump of the cord should be treated with the same remedies, but if the cord has already separated, the scar should be washed with boric acid solution or with sublimate, and then should be touched with silver nitrate.

Kissel, A. A.: Werlhof's Disease and Tuberculosis. (*Russki Vratch.*, Vol. iii., No. 26, p. 929.)

As a result of numerous observations on the hemorrhagic diseases in childhood (purpura, Werlhof's disease, peliosis) the author concludes that there is some connection between them and tuberculosis. It seems that the latter disease predisposes in some manner to the former.

It is very difficult, says the author, to draw fixed lines separating the various forms of purpuric diseases. The course of these diseases does not resemble that of an infection.

The hemorrhagic diathesis occurs frequently in Russia. Its etiology is obscure.

Cappelletti: A Contribution to the Study of Neurasthenia in Infancy. (*Riforma Medica*, No. 17, 1903.)

But very little has been written on this subject, and the work of Boyadyeff is probably the most complete. Cappelletti, however, believes that this disease is not as rare in infancy as is generally supposed. The reason it is considered rare is that in children neurasthenia assumes various disguises which make it difficult to distinguish from other conditions, especially from hysteria. The joyful and happy disposition of the child conceals and counteracts certain manifestations of neurasthenia such as the inattentiveness, the restlessness, the melancholy air, the weak will power, and the imperfect memory; the headache, vertigo, insomnia, the disturbances of the stomach, the intestines, the heart and the sexual organs. These and other symptoms, while in themselves but of slight value, help in the diagnosis of neurasthenia. It is very sad that the diagnosis of this condition is so difficult in children, for its recognition is not only of practical value, but of considerable social importance. Neurasthenia in children is not painted in the distinct colors which were indicated by Beard for adults; for in children there is a lack of those complex physical and psychical stimuli, which so clearly demonstrate the irritable and exhausted condition of the adult. The chief characteristic in neurasthenic children is that they always hesitate, are never sure as to what they will do, and are fearful lest the result will be a failure or disaster. They are always engaged in self-analysis, and their will power is destroyed. The author considers this as the infallible sign of neurasthenia in childhood.

Rist, E.: A Case of Diabetes in a Child of Eleven Years. (*Annales de Méd. et Chir. Inf.*, June 1, 1904, p. 374.)

This occurred in a male child, with a history of excellent health, except for varicella at six months. Eight days before coming under observation the boy suffered an attack of indigestion due to an indiscretion of diet. From this day there was loss of appetite, unquenchable thirst, abnormally abundant urine with loss of flesh. The condition became rapidly worse with abdominal pain, vomiting, constipation, drowsiness and suppression of urine, followed by abolition of reflexes, unequal pupils, irregular respiration and coma. The urine withdrawn by catheter gave a typical reaction with Fehling's solution, and the child died twelve hours after entrance to the hospital. The results of autopsy were absolutely negative, there being no lesions in any organs. The meninges showed intense congestion. It is impossible to draw any conclusion as to the significance of the indigestion. In the absence of nervous and pancreatic lesions, one might think of an alimentary intoxication.

Thomas: Typhoid Fever Following Measles. (*Annales de Méd. et Chir. Inf.*, June 1, 1904, p. 366.)

The following case is reported by reason of its rarity:—A girl five and one-half years old developed a frank case of measles. No doubt could be expressed as to the diagnosis, there being an epidemic of the disease at the time. In the very early stage of convalescence the child complained of gastric distress, which was shortly followed by diarrhea, fatigue and anorexia, dry coated tongue, vomiting, inflation of the abdomen, rise of temperature and pulse. On the eighth day a few rose spots were discovered, the temperature fluctuated and there was general prostration. Enlargement of the spleen and a positive Widal reaction made the diagnosis clear. Defervescence took place in the third week and convalescence was without incident. The source of contamination could not be discovered. This fact would support the theory of Roger, who considers that the bacillus of Eberth may lie dormant in healthy tissue, and become virulent in the presence of an antecedent infection, which lessens the general resistance.

SURGERY.

Martinez Vargas, A.: Myositis of the Semitendinosus; Suppuration; Contracture; Incision; Radical Cure. (*La Med. de Los Niños*, Vol. iv., No. 47, p. 329.)

The author reports a case of suppurating myositis in a child eight years old, as the result of a number of kicks from a mule. There was intense pain which increased on motion and the affected limb became completely contracted two weeks after the accident. On attempting extension of the leg, a violent pain was felt in the posterior region of the thigh. The muscles concerned in the contraction were the semimembranosus and semitendinosus, which formed a limited area of induration, extending from the middle of the upper third to the beginning of the lower third of the thigh. An incision was made in the indurated part, and a quantity of pus and blood-clots issued. The cavity was scraped with a spoon and drained with iodoform gauze. It healed after two weeks and the mobility of the limb was perfectly restored.

Stone, J. S.: Subperiosteal Fractures of the Humerus in Children. (*Boston Medical and Surgical Journal*, August 11, 1904, p. 157.)

Five cases are reported in children whose ages ranged from six to twelve years. In each instance as the result of a fall, there was fracture of the surgical neck, as shown by radiograph. The true nature of the injury was not discovered by ordinary examination in the first two cases; but after the radiograph had shown them to be fractures the later cases were made out, from their analogy. The writer says that the cases were so similar that in future the diagnosis should be made "from the clinical symptoms without the aid of the radiograph. Each occurred in a child beyond the age at which greenstick fracture is most common. Each resulted from a fall upon the outstretched arm. In each there followed absolute inability to use the deltoid. Each child could with varying hesitation and difficulty raise the hand to the face and the top of the head but always with the arm kept as close to the side as possible. In each, passive motions in all directions could be made to the full normal limits and were guarded by but slight spasm. Each had a slight atrophy of the deltoid and scapular muscles. The deformity in each case was trifling. Each had a very sharp, bony ridge on the anterior surface of the neck of the humerus just at the seat of fracture; but this deformity might easily be overlooked unless attention was directed to its exact location. Each had slight localized tenderness at the seat of fracture. Each had very slight pain about the shoulder. The two signs of fracture ordinarily sought, crepitus and abnormal mobility, were conspicuously absent in each case.

"These injuries belong to what may be called subperiosteal fractures. Greenstick fractures occur most frequently in somewhat younger children. The latter term should be confined to those cases in which the cortical bone on the convex side is broken but on the concave side is merely bent at the point of fracture. In a true greenstick fracture there is thus always an angular but never any lateral displacement. In each of these cases the radiograph showed the fracture to be transverse with slight lateral displacement. In none of these cases except the fourth was the impaction alone sufficient to have maintained the fragments in their relation to each other. Impaction may mask a fracture, but in children the absence of marked deformity, the absence of crepitus, and the absence of abnormal mobility are to be attributed in part to the slight impaction, but chiefly to the toughness and strength of the periosteum.

"When after a fall on the arm or shoulder children are unable to abduct the arm but present none of the other signs of fracture or dislocation and are able to move the arm in other directions most careful examination should be made to determine localized tenderness anteriorly just below the head of the humerus, together with a slight irregularity in the contour of the bone at the same point. These signs are sufficient to establish the diagnosis of fracture of the surgical neck, and should deter one from further attempts by rough handling to secure crepitus or mobility."

Kerr, C. LeGrand: Some Considerations in Relation to Surgical Practice among Children. (*Brooklyn Medical Journal*, June, 1904, p. 229.)

After discussing those surgical conditions that are either peculiar to or more frequent in children, the writer says that children as a rule bear operations better and give better results than adults. But children are very susceptible to four things, hunger, cold, loss of blood and pain.

It is a simple matter to withhold food from an adult previous to the use of an anaesthetic, but a cup of warm but diluted milk given two or three hours before the anaesthetic, will do much to relieve the subsequent suffering of the child.

A child wrappd in cotton and wool during and for some hours following the operation, will give a better result than one not so protected. Guarding against loss of blood entails quick, decisive work, as well as the use of all the usual provisions against hemorrhage. The loss of one ounce of blood in an infant equals in its effect upon the economy, the loss of thirty-three ounces in the normal adult.

A child should never be allowed to suffer pain or loss of sleep which lessens its resistance after operation, unless pain has a distinct diagnostic value.

Stewart, Francis T.: Typhoidal Perforation. (*American Journal of the Medical Sciences*, May, 1904, p. 795.)

Among eight cases operated upon by the writer, two were in children, aged nine and ten years. One of these, a girl of nine years made a good recovery; the other patient died of general peritonitis sixty hours after operation. In the case that recovered the operation was done three hours after perforation; in the fatal case operation was done twelve hours after perforation and liquid feces were found in the abdomen.

Mauclaire: Generalized Peritonitis of Appendicular Origin. Drainage. Cure. (*Le Progres Méd.*, March 26, 1904, p. 211.)

The child had suffered for forty-eight hours with vomiting and colic. Examination showed pinched facies, temperature below 38°C., pulse good, though slightly frequent; tenderness diffuse, inflation of the abdomen, more especially over the superior portion. The symptoms were neither distinctive of appendicitis nor peritonitis. A right lateral laparotomy was performed, the incision revealed a quantity of pus, and the appendix was found long, closely adherent, but not perforated; there was a peritonitis of appendicular origin. The right side was thoroughly drained, the drain reaching down to the pelvis. A second incision was made on the left side for the purpose of drainage. The symptoms soon abated and the child recovered slowly. The peritonitis had been of rapid and insidious course.

HYGIENE AND THERAPEUTICS.

Zuppinger, Karl A.: The Value of Antitoxin in the Prophylaxis of Diphtheria. (*Wiener Klin. Woch.*, January 14, 1904, p. 31.)

The author gives the result of one thousand prophylactic injections of antitoxin. When a child is brought to the Kronprinz Rudolf-Kinderspital suffering from diphtheria, the number of brothers and sisters under fourteen years of age is ascertained and a physician is immediately sent to immunize all exposed children. The dose usually administered is 200 units except in cases exposed to a virulent infection when as high as 1,000 is given.

Among these thousand children, eighteen or 1.8 per cent. developed diphtheria. Of these, 4 came down with the disease on the next day, 4 on the second day and 3 on the third day after infection. Excluding these cases which probably had the disease when injected, it would reduce the number to 7 or .7 of 1 per cent. In these immunized cases the disease ran a very mild course and might be termed abortive cases.

Among the exposed children not receiving antitoxin, probably to the number of 400, forty-five came down with the disease and five died in spite of serum treatment.

Diphtheritic antitoxin is now given to all children suffering from measles and scarlet fever, with a marked reduction in the mortality. The author believes that the prophylactic effect of the antitoxin lasts for three to four weeks. Before the days of antitoxin in his hospital the mortality was 39 per cent. and this has been reduced under the serum treatment to 12 per cent. The author collected some interesting statistics from work done along this line in other countries. In Italy, out of 14,967 prophylactic injections, 1.8 per cent. developed the disease. In France, out of 11,300, 2.4 per cent. In Bosnia, 1.7 per cent.; in Austria-Hungary, 1.5 per cent.; in Germany, 4 per cent; Norway, 2 per cent; Holland, 1.4 per cent.; Russia, 2.1 per cent., and England and the United States, 0.9 per cent. He strongly recommends that laws should be framed making prophylactic injection obligatory.

Cardamatis, Jean P.: Buttermilk in the Feeding of Infants, Especially During Attacks of Gastroenteritis. (*Arch. de Méd. des Enf.*, February, 1904, p. 87.)

The fresh milk is kept for twenty-four hours in a porcelain vessel at 20° C., the butter is removed from the acid liquid; then the buttermilk is boiled and to each litre are added 12 grams of rice flour and 70 grams of sugar. This is the ordinary procedure employed by Ballot, Texeira de Mattos and others.

The author used this preparation of buttermilk in 23 cases, 21 being nurslings who were sick, one perfectly healthy infant and one child of three years. Some were partly nursed and partly fed on buttermilk, others were given cow's milk and buttermilk, while a third set were given buttermilk alone.

Careful observations were made of the weight, of the urine and the stools. In nearly every case the urine was alkaline, being acid only when there was a green diarrhea or no gain in weight. The stools changed from being fetid, green, mucous and curded and became more solid, smooth, well digested and of normal odor; this took place in nearly every case. Particularly noticeable was the absence of curds from the stools.

The author concludes from his experiences that buttermilk prepared in the way described is the best substitute, during winter and spring at least (the seasons his cases were under observation) for breast milk in cases of malnutrition or of gastroenteritis.

Gibson, J. Lockhart: Painted Railings and Walls the Source of Lead Poisoning amongst Queensland Children. (*The Australasian Medical Gazette*, April 20, 1904, p. 149.)

Four cases of ocular neuritis, simulating basal meningitis, and considered as manifestations of plumbism, caused the writer to search for the source of the injurious lead. Failing to find lead in the water used by the affected children, the author, at the suggestion of the Government Analyst, was brought to the idea that fresh paint or old crumbling paint, on railings and walls was the source of the poisoning. In one family a little girl had optic neuritis; her brother had a marked blue line on the gums. The urine of the patients showed lead, and the dust of the floors also showed lead on analysis. It was found that in families those children who had the habit of biting their nails or sucking their fingers were most apt to suffer; in the summer running about the rooms barefoot seemed also to be a factor.

Baumel: Late and Intense Symptoms of Phosphorus Poisoning Seen in a Little Girl Seven Years Old; Cure. (*Annales de Méd. et Chir. Inf.*, May 1, 1904, p. 300.)

The child had partaken of chicken previously contaminated by the ingestion of oats boiled with matches. No symptoms presented for three days, when signs of cheerlessness and depression were noted. The following day she was seized by generalized convulsions and trismus which persisted only to be followed by intense abdominal and muscular pains, jaundice, anuria with slight fever. A milk diet, infusion of couch-grass, perles of ether and bromid of potassium were ordered, with the result that the condition improved. The jaws relaxed and from day to day the convulsions and jaundice became less marked with reappearance of the urine. There were, however, severe fluctuations, until one month after the onset when the child was considered completely cured. The case is remarkable in that so far, contrary to the general rule, the child was cured after presenting the most severe form of phosphorus poisoning.

Torella: On Silver Fluorid (Tachiol) and its Application in Treatment. (*La Pediatria*, 1903, No. 7, p. 504.)

The author gives the results of his experience with silver fluorid before the medical congress of Egypt held at Cairo. He made a comparative study of tachiol as a germicide, and found that it is very efficient and but slightly toxic to the organism. He found it especially useful in cases of purulent ophthalmia in the newly-born, solutions of one part in three hundred being used, with prompt success, as antiseptic washes. He believes that this new antiseptic will have a prominent place in the treatment of ophthalmia in the newly-born.

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THE HISTORY OF PEDIATRICS AND ITS RELATION TO OTHER SCIENCES AND ARTS.*

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The most human of all the gods ever created by the fancy or the religious cravings of mortal men was Phœbus Apollo. It was he that gave its daily light to the wakening world, flattered the senses of the select with music, filled the songs of the bards and the hearts of their hearers with the rhythm and wonders of poetry, that inspired and reveled with the muses of the Parnassus, cheered the world with the artistic creations of the fertile brains and skilful hands of a Zeuxis and Phidias—he, always he, that inflicted and healed warriors' wounds and sent and cured deadly diseases.

In the imagination of a warm-hearted and unsophisticated people it took a god to embrace and bestow all that is most beneficent and sublime—physical, moral, and mental light and warmth; the sun, the arts, poetry, and the most human and humane of all sciences and arts, namely, medicine.

Ancient gods no longer direct or control our thoughts, feelings, and enjoyments, either physical or intellectual. The kinship and correlation of hypotheses and studies, experience and knowledge are in the keeping of the philosophical mind of man, who is both their creator and beneficiary. To demonstrate this rational affinity of all the sciences and arts, some far-seeing men planned this great Congress. The new departure—in the arrangement for it—should be an example to future general and special scientific gatherings. Indeed, some of its features were adopted by the organization committee of the International Medical Congress which was to take place at St. Louis, but was given up on account of the limited time at the disposal of the great enterprise.

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Congresses are held for the purpose of comparing and guarding diversified interests. A free political life requires them for the consulting of the needs of all classes. Scientific congresses are convened to gather and collate the varied opinions, experiences and results of many men, and to create or renew in the young and old the enthusiasm of youth. Their number has increased with the modern differentiation of interests and studies. Specialization in medicine is no longer what it was in old Egypt, namely, the outgrowth of the all-pervading spirit of castes and sub-classifications, but as well the consequence as the source of modern medical progress. It is difficult, however, to say where specialization ends and over-specialization begins, or to what extent specialization in medicine is the result of mental and physical limitation, or of the spirit of deepening research; or, on the other hand, of indolence or of greed; or whether, while specialization benefits medical science and art, it lowers the mental horizon of the individual, and either cripples or enhances his usefulness in the service of mankind. For that is what medical science and art are for. José de Letamendi is perhaps correct when he says that a man who knows nothing but medicine does not even know medicine. What shall we expect, then, of one who knows only a small part of medicine and nothing beyond?

Congresses in general have been of two kinds. They are called by specialists for specialists, or they meet for the purpose of removing or relieving the dangers of limitation. This is what explains the great success of international and of national gatherings, such as the German, British, American, and others, and what has given the Congress of American Physicians and Surgeons with its triennial Washington meetings its broadening and chastening influence.

Nor are medical meetings the only attempts at linking together what has a tendency to get disconnected. Look at our literature. The rising interest in the history of medicine as exhibited in Europe and lately also among us, and individual contributions, such as Gomperz's great book on Greek thinkers; or even lesser productions, such as Eymin's Médecins et Philosophes, 1904; or the important pictorial works of Charcot, Richet and

Holländer, prove the correlation of medicine with history, philosophy and art.

Our special theme is the history of pediatrics and its relations to other specialties, sciences and arts. Now Friedrich Ludwig Meissner's Grundlage der Literatur der Pädiatrik, Leipzig, 1850, contains on 246 pages about 7,000 titles of printed monographs written before 1849 on diseases of children, or some subject connected with pedology. Of these, two were published in the fifteenth century, sixteen in the sixteenth, twenty-one in the seventeenth, seventy-five in the eighteenth. P. Bagellardus, de aegritudinibus puerorum, 1487, and Bartholomeus Metlinger, "Ein vast nützlich Regiment der jungen Kinder," Augsburg, 1473, opened the printed pediatric literature of Europe. In the sixteenth century, Sebastianus Austrius, de puerorum morbis, Basileae, 1549, and Hieronymus Mercurialis, de morbis puerorum tractatus, 1583, are facile principes; in the eighteenth, Th. Harris, de morbis infantum, Amstelodami, 1715; Loew, de morbis infantum, 1719; M. Andry, l'orthopédie ou l'art de prévenir et corriger dans les enfants les difformités du corps, 1741; Nils Rosen de Rosenstein, 1752; E. Armstrong, An Essay of Diseases most Fatal to Infants, 1768; and M. Underwood, Treatise on the Diseases of Children, 1784; also Hufeland established pediatrics as a clinical entity; while Edward Jenner, 1798, An Inquiry into the Causes and Effects of the Variolæ Vaccinæ, opened the possibilities of a radical prevention of infectious and contagious diseases, the very subject which, a century later, is engaging the best minds and a host of assiduous workers in the service of plague-stricken mankind.

In the United States pediatrics was taught in medical schools, or was expected to be taught, by the professors of obstetrics and the diseases of women and children. The reorganization of the New York Medical College in East Thirteenth Street facilitated the creation, in 1860, of a special clinic for the diseases of the young. Instead of the united gynecologic and obstetric clinics held by Bedford, Gilman, and G. T. Elliott in their respective medical colleges, there was a single clinic for the diseases of the young exclusively. When the Civil War caused the college to close its doors forever, in 1865, I transferred the clinic to the University Medical College, and in 1870 to the College of Physicians and Surgeons. Meanwhile other medical schools imitated the example thus presented. The teachers were classed amongst the clinical professors; only in those schools which are forming part of universities and are no longer proprietary establishments, a few now occupy the honored position of full professors; in a very few the professor of pediatrics is a full member of the "faculty."

In the English colonies of America the earliest treatise on a medical, in part pediatric, subject was a broadside, 12 inches by 17. It was written by the Rev. Thomas Thacher, and bears the date January 21, 1677-8. It was printed and sold by John Foster, of Boston. The title is "A brief rule to guide the common people of New England how to order themselves and theirs in the Small-Pocks, or measles." A second edition was printed in 1702.

Before and about the same time in which American pediatrics received its first recognition at the hands of the New York Medical College, European literature furnished a new and brilliant special literature. France, which almost exclusively held up the flag of scientific medicine during the first forty years of the eighteenth century, furnished in C. Billard's Traité des maladies des enfants nouveau-nés, 1828, and in Rilliet's and Barthez's Traité clinique et pratique des maladies des enfants, 1838-43, standard works which were examples of painstaking research and fertile observation. England, which produced in 1801 I. Cheyne's Essays on the diseases of children, gave birth to Charles West's classical lectures on the diseases of infants and children in 1848, and F. Churchill's treatise in 1850.

The German language furnished a master-work in Bednar's die Krankheiten der Neugebornen und Säuglinge, 1850-53. A. Vogel and C. Gerhardt, both general clinical teachers, gave each a text book in 1860, Henoch in 1861; and Steffen, in 1865-70, published a series of classical essays.

The number of men interested in the study and teaching of pediatrics grew in proportion to the researches and wants of the profession at large. That is why three large and influential cyclopedias, the works of many authors, found a ready market, namely, C. Gerhardt's Handbuch der Kinderkrankheiten, 1877-93; John M. Keating's Cyclopedia of the Diseases of Children, Medical and Surgical, 1889-90, and I. Grancher's and I. Comby's Traité des Maladies des Enfants, in five volumes, the second edition of which is being printed this very year.

The collective and periodic literature of pediatrics began at a comparatively early time. There was a period toward the end of the eighteenth century when the influence of Albrecht von Haller seemed to start a new life for German medical literature before it lost itself again in the intellectual darkness of Schelling's natural philosophy, from which it took all the powers of French enthusiasm and research, and the epoch-making labors of Skoda, Rokitansky, and finally Virchow, to resuscitate it. About that early time of Haller, there appeared in Liegnitz, 1793, a collection of interesting treatises on some important diseases of children (Sammlung interessanter Abhandlungen über etliche wichtige Kinderkrankheiten). France followed in 1811 with a collection bearing the title: La Clinique des Hôpitaux des enfants, et revue retrospective médico-chirurgicale et hygiénique; publiées sous les auspices et par les médecins et chirurgiens des hôpitaux consacrés aux maladies des enfants. Next in order are five volumes of Franz Joseph von Metzler's Sammlung auserlesener Abhandlungen über Kinderkrankheiten, 1833-36; twelve fascicoles under the title Analekten über Kinderkrankheiten oder Sammlung ausgewählter Abhandlungen über die Krankheiten des Kindlichen Alters; la clinique des Hôpitaux des enfants, Redacteur en chef Vanier, Paris, 1841; and I. Behrend and A. Hildebrandt, Journal für Kinderkrankheiten, which appeared regularly from 1843 to 1872. It gave way to the Jahrbuch für Kinderheilkunde, which appeared in quick and regular succession from 1858 to the present time. Three series of Austrian journals between 1855 and 1876 consisted of a dozen volumes only. They contain among other important contributions the very valuable essays of Ritter von Rittershayn, who deserved more recognition during his life and more credit after his death, for his honesty, industry and originality, than he attained.

Special pediatric journals have multiplied since. The United States has two, France four, Germany five, Italy two, Spain one. As long as they are taken by the profession we should not speak of overproduction. I attribute their existence to the general conviction that there is no greater need than that of the distribution of knowledge of the prevention and cure of the diseases of the young. The literature of pediatrics seems to prove it. Not 7,000, as before 1850, not even 70,000 titles of books, pamphlets and magazine articles exhaust the number.

Pediatric societies have increased at the same rate. The American Medical Association and the British Medical Association founded each a section twenty-five years ago, the New York Academy of Medicine, in 1886. The American Pediatric Society was founded in 1889, the Gesellschaft für Kinderheilkunde connected with the German Gesellschaft der Aerzte und Naturforscher in 1883, the English Society for the Study of Disease in Children, in 1900. There are pediatric societies in Philadelphia, in the State of Ohio, in Paris, Kiew, St. Petersburg, and many places, all of them engaged in earnest work which is exhibited in volumes of their own or in the magazines of the profession. If we add the annual reports of hundreds of public institutions, which are so numerous, indeed, that a large volume of S. Hügel, "Beschreibung sämmtlicher Kinderheilanstalten in Europa," was required as early as 1848 to enumerate them; and an enormous number of text books of masters, and of such as are anxious to become so, and monographs, and essays, and lectures, and notes preliminary and otherwise, which fill the magazines that most of us take or see, and some of us read—we may form an idea to what extent a topic formerly neglected has taken hold of the conscience and the imagination of the medical public.

Before 1769 there was no institution specially provided for sick children. They were admitted now and then to foundling institutions and general hospitals. In that year Dr. G. Armstrong established a dispensary in London, which was carried on until he died. A similar institution was founded in Vienna by Dr. Marstalier, in 1784. Goelis took charge of it in 1794, L. Politzer developed it, and it is still in existence. Before the French Republic was strangled, it founded the first and largest child's hospital in Europe, the Hôpital des Enfants malades, in 1802. The Nicolai Hospital was established in St. Petersburg, in 1834, by Dr. Friedburg; the St. Anne's Child's Hospital, in Vienna, 1837, by Dr. Ludwig Mauthuer; and the Poor Children's Hospital, of Buda-Pesth, in 1839, by Dr. Schöpf, Merei, who afterwards founded and directed the Child's Hospital of Manchester, England.

Since that time the increasing interest in the diseases of children on the part of humanitarians and of physicians and teachers has multiplied children's hospitals. Most of them are small, but they are numerous enough both to exhibit and disseminate the sense of responsibility to the sick and to the necessities of teaching. The United States has been the last country to participate in these endeavors. The mostly proprietary medical schools did not find pediatric teaching to their advantage, and it took the hearts and purses of the public a long time to be opened. The waves of humanitarianism, sometimes directed by a church, and the demands of science have finally overcome previous indolence. There are many general hospitals that gradually opened special children's wards. You find pediatric hospitals in some of the larger cities—New York, Boston, Philadelphia, Albany, St. Louis, and others. It has so happened, however, that real specialties have appealed more to the general sympathy than pediatrics. That is why the number of beds in orthopedic and other special hospitals are mostly favored. Practical teaching has not been extensive. Children's hospitals that should be used for that purpose, and that are directly connected with a medical school, are but few. It has taken the medical faculties, even of universities, too much time to appreciate the necessity of special and well-regulated bedside teaching. In some instances lay trustees, guided by their medical advisers, have opened their wards before faculties have consented to open their eyes. At the present time, however, there is hardly a great medical school that does not give amphitheatre or bedside instruction, either in a children's ward of a general hospital or in a special children's or babies' hospital. To a certain extent the teaching of pediatrics in a general hospital has its great advantages. It is not a specialty like that of a special sense or a tissue. For the purpose of study it had to be segregated, but it will never be torn asunder from general medicine. Vogel and Gerhardt were both general clinicians.

The comparative anatomy and physiology, hygiene, etiology, and nosology of pediatrics have been discussed before you by one of the most prominent pediatrists of our era.* It will be my privilege to explain, as far as time will permit, its relation to general medicine, to embryology and teratology, obstetrics, hygiene, and private and public sanitation, to therapeutics, both pharmacal and operative, and to the specialties of otology, ophthalmology, dermatology, and the motor system, to pedagogy, to neurology and psychiatry, forensic medicine and criminology, and to social politics.

Infancy and childhood do not begin with the day of birth. From conception to the termination of fetal life evolution is gradual. The result of the conception depends on parents and ancestors. Nowhere are the laws of heredity more perceptible than in the structure and nature of the child. Physical properties, virtues and sins, and tendencies to disease may not stop even with the third or fourth generation. Hamburger and Osler trace an angioneurosis through six generations, the first case in the series being observed by Benjamin Rush. In many instances, still-births, early diseases, atrophy, and undue mortality of the young depend on antenatal happenings. The condition and diet of the mother influences her offspring. The danger of a contracted pelvis, and the necessity of premature delivery may be obviated by the restriction of the diet, or even by appropriate (thyroid and other) medication of the pregnant woman. Experience and experiment tell the same story. The continued practice of preventing conception causes endometritis. Alcoholism causes chronic placentitis, premature confinement, or still-birth. So does chronic phosphorus and lead poisoning. Fortunately, however, the usual medication resorted to during labor is rarely dangerous, for even morphine or ergot doses given to the parturient woman on proper indications affect the newly-born rarely, and chloroform anesthesia almost never.

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* See abstract of address by Prof. Dr. Escherich on page 848 of this number of ARCHIVES OF PEDIATRICS.

Scanty amniotic liquor, by the prevention of free intra-uterine excursions, may cause club-foot; or close contact of the surfaces of the embryo and the membranes give rise to adhesions of the placenta and the head, to filaments and bands whose pressure or traction produces grooving or amputation of limbs, cohesion of toes or fingers, umbilical, meningeal, encephalic, or spinal hernia; not in extra-uterine pregnancy only, where such occurrences are very frequent. Even the majority of harelips and fissured palates have that origin. Arrests of development and fetal inflammation are the headings under which most of the anomalies of the newly-born may be subsumed; congenital diseases of the ear and of the heart may result from either cause or from both. Obstructions of the intestines, the rare closures of the esophagus, the ureter, and the urethra, with hydronephrosis and cystic degeneration of the kidneys are probably more due to excessive cell proliferation in the minute original grooves than to inflammation.

The insufficient closures of normal embryonic fissures or grooves explains many cases of spina bifida, many of encephalocele, most of the split lips and palates, all of porencephalus, bifid uvula and epiglottis, pharyngeal and thyroglossal fistulæ, the communications between the intestinal and urogenital tracts, and the persistency and patency of the urachus.*

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* J. W. Ballantyne, in his Manual of Antenatal Pathology and Hygiene, 1902, has a separate chapter on the relations of antenatal pathology to other branches of study, to general pathology, to the biological sciences, such as anatomy, embryology, physiology, botany, and zoology, and to the medical, including obstetrics, public health, pediatrics, medicine, psychology, dermatology, surgery, orthopedics and medical jurisprudence, finally to gynecology and neonatal pathology.

Heredity need not show itself in the production of a fully developed disease. It exhibits itself normally either in equality or resemblances, either total or partial, of the body, or some one or more of its external or internal organs. In this way it may affect the nervous, the muscular, the osseous, or other tissues. That is why dystrophies in different forms, obesity, achondroplasia, hyperplasia, or atrophy may be directly inherited, while in other cases the disposition to degeneration only is transmitted.

Hereditary degeneracy is often caused by social influences. The immoral conditions created by our financial system make women select not the strong and hearty and the young husband, but the rich and old, with the result of having less, and less vigorous, children. Certain professions, the vocations of soldiers and mariners, and subordinate positions of employees in general, enforce complete or approximate celibacy, with the same result. The nations that submit to the alleged necessity of keeping millions of men in standing armies, are threatened with a degenerated offspring, for not only do they keep the strongest men from timely marriages, but they increase prostitution and venereal diseases, with their dire consequences for men, women, and progeny. Wars lead to the same result in increased proportion, for tens and hundreds of thousands of the sound men are slain or crippled, or demoralized. Those who are inferior and unfit for physical exertions remain behind and procreate an inferior race. Those who believe with Lord Rosebery that an empire is of but little use without an imperial race will always, in the interests of a wholesome civilization, object to the untutored enthusiasm which denounces the "weakling," and the "craven cowardice" of those who believe in the steady evolution of peace and harmony amongst men, and, in sympathy with the physical and moral health of the present and future generation, will prefer the cleanly and washed sportsmanship of an educated youth to that of the mud-streaked and blood-stained manhunter.

A great many diseased conditions cannot be thoroughly understood unless they be studied in the evolving being. Tumors are rarely inherited, but many of them are observed in early life. Lymphoma, sarcoma, also lipoma and carcinoma, and cystic degeneration, are observed at birth, or within a short time after, and seem to favor Cohnheim's theory, according to which many owe their origin to the persistence in an abnormal location of embryonic cells. This theory does not exclude the fact that congenital tumors may remain dormant for years or decades and not destroy the young.

So much on some points connected with *embryology* and *teratology*. The connection with *obstetrical practice* is equally intimate. Three per cent. of all the mature living fetuses are not born into postnatal life this very day. To reduce the mortality even to that figure, it has taken much increase of knowledge and improvement in the art of obstetrics to such an extent that it has become possible by Cesarean section not only to save the fetus of a living, but also of a dead mother, for the fetus in her may survive the dying woman.

But after all, many a baby would be better off, and the world also, if it had died during labor. There are those, and not a few, who are born asphyxiated on account of interrupted circulation, compression of the impacted head, or meningeal or encephalic hemorrhage, which destroys many that die in the first week of life. Those who are not so taken away may live as the result of protracted asphyxia only to be paralytic, idiotic, or epileptic. Many times in a long life have I urged upon the practitioner to remember that every second added to the duration of asphyxia adds to the dangers either to life or to an impaired human existence. Besides fractures, facial or brachial paralysis, cephalhematoma and hematoma of the sternocleido-mastoid muscle, gonorrheal ophthalmia, with its dangers to sight and even life, may be daily occurrences in an obstetrician's life. All such cases prove the insufficiency of knowledge without art, or of art without knowledge, and the grave responsibility of the practical obstetrician. To lose a newly-born by death causes at least dire bereavement; to cripple his future is not rarely criminal negligence.

Within a few days after birth the obstetrician or the pediatrist has the opportunity of observing all sorts of microbic infections, from tetanus to hemorrhages or gangrene, and the intense forms of syphilis. Not an uncommon disease of the newly-born and the very young is nephritis. It is the consequence, in many cases, of what appears to be a common jaundice, or of uric acid infarction, which is the natural result of the sudden change of metabolism. The diverticula of the colon, as described by Hirschsprung and Osler, and what nearly forty years ago I characterized as congenital constipation, which depends on the exaggeration of the normally excessive length of the sigmoid flexure, belong to the same class. Their dangers may be avoided when they are understood. Of the infectious diseases of the embryo and the fetus, it is principally syphilis that should be considered; amongst the acute forms variola and typhoid are relatively rare.

What I have been permitted to say is enough to prove the intimate interdependence and connection between pediatrics and the diseases of the fetus, with embryology and teratology, obstetrics, and some parts, at least, of social economics.

After birth there are anomalies and diseases which are encountered in the infant and child only. There are also, common to all ages, though mostly found in children, such diseases as exhibit a symptomatology and course peculiar to them. The first class, besides those which are seen in the newly-born, is made up mostly of developmental diseases—scrofula, rachitis, chlorosis. The actual or alleged ailments connected with dentition, most forms of stomatitis, Bednar's socalled aphthæ, the ulceration of "epithelial pearls" along the raphe, amygdalitis, pharyngitis, adenoid proliferations, latero- and retro-pharyngeal abscesses belong here. Infectious diseases, such as variola, diphtheria, scarlatina, measles, pertussis, and tuberculosis of the glands, bones, joints, and peritoneum have been most successfully studied by pediatrists or those clinicians who paid principal attention to pedology. Meissner prints the titles of more than 200 actual monographs on scarlet fever published in Europe before 1848. Pleurisy and pneumonia of the young have their own symptomatology. Empyema is more frequent and requires much more operative interference. Tracheotomy and intubation are mostly required by the young, both on account of their liability to edema of the larynx and to diphtheria, and of the narrowness of the larynx. Of invagination, 25 per cent. occur under one year, 53 per cent. under ten. Appendicitis, sometimes hereditary and a family disease, would long ago have been recognized as a frequent occurrence in the young if it had not been for the difficulty, mainly encountered in the young, and sometimes impossibility of its diagnosis. That is what we have been taught by Hawkins and by Treves, and lately by McCosh. Operations on glandular abscesses, osteotomies, and other operations on the bones and joints, particularly in tuberculosis, and on malformations, such as have been mentioned, require the skilful hand of the operating physician in a great many instances. Omphalocele, exstrophy of the bladder, undescended testicle, spermatic hydrocele, multiple exostoses, imperforate rectum, atresia of the vagina, or an occasional case of stenosed pylorus, belong to that class, some requiring immediate operation, some permitting of delay. It is principally infancy that demands removals of angioma, which are almost all successful, and of hygroma, mostly unsuccessful, mainly when situated on the neck and resulting from obstruction of the thoracic duct sometimes connected with thrombosis of the jugular vein. Childhood requires correction of kyphosis and scoliosis, and operations for adenoids and hypertrophied tonsils, and furnishes the opportunities for lumbar puncture and for laparotomy in tubercular peritonitis; also suprapubic cystotomy, and mastoid operations. That gum-lancing is no operation indicated or permissible in either the young or adult, and not any more so in the former than in the latter, is easily understood by those who acknowledge its necessity only in the presence of a morbid condition of the gums or teeth, and not when the physiological process of dentition exhibits no anomaly. It scarcely ever does. Altogether, operating specialists would work and know very much less if a large majority of the cases were not entrusted to them by the pediatrist, who recognizes the principle that those who are best fitted to perform it should be trusted with important medical work. So well is the seriousness and difficulty of operative procedures, as connected with diseases of children, recognized by experts, that 1,500 pages of Gerhardt's handbook are dedicated to external pathology and operations, and that special works, besides many monographs by hundreds of authors, have been written by such masters as Guersant, Forster, Bryant, Giraldès, Holmes, St. Germain, Karewski, Lannelongue, Kirmisson, and Broca.

Ear specialists recognize the fact that *otology* is mostly a specialty of the young. The newly-born exhibit changes in the middle ear which are variously attributed to the presence of epithelial detritus, to the aspiration of foreign material, or to an edema *ex vacuo* occasioned by the separation of formerly adjacent mucous surfaces. Pus is found in the middle ear of 75 per cent. of the still-born, or of dead nurslings. It contains meconium, lanugo, and vernix. Aschoff* examined fifty still-born, or such as had lived less than two hours; twenty-eight of them had pus in the middle ears (55 per cent.). He also examined thirty-five infants that had lived longer than two hours; twenty-four had pus (70 per cent.). Evidently the latter class had been exposed to a microbic invasion. The diagnosis in the living infant is very difficult, mostly impossible, on account of the large size of the Eustachian tube, which, after having admitted the infection, allows the pus to escape into the pharynx and the rest of the alimentary canal. Many of the newly-born that die with unexplained fevers perish from the septic material, or its toxins, absorbed in the middle ear or the intestines. Nor are older children exempt. Geppert (*Jahrb. f. Kind.,* Vol. xlv., 1897) found a latent otitis media in 75 per cent. of all the inmates of the children's hospitals. Both latent and known otitis is often connected with pneumonia, or with pneumonia and enteritis. In individual cases it may, however, be difficult to decide which of the two or three is the primary, which the secondary affection.

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* Aschoff, Zeit. f. Ohrenh. Vol. xxxi.

The great vascularity of the middle ear, but still more the accessibility of the funnel-like Eustachian tube in the infant, renders otitis media very frequent. Schwartze's assertion that otitis media furnishes 22 per cent. of all ear cases in general or special practice is surely correct. Besides, difficult hearing is very frequent in the young, a fact of the greatest import to pedagogy. As early as 1886 Bezold found that of 1,900 school children 25 per cent. had only one-third, and 11 per cent. of the others only one-fifth of normal hearing. The frequent affections of the nose and pharynx in the young explain these facts and exhibit the possibilities of preservation. Finally, the immature condition of the mastoid process and of the floor of the external canal is best appreciated by the practitioner, general or special, who deals with their abscesses.

Whether deafmutism is the result of consanguineous marriage cannot be definitely asserted. It is not often hereditary, quite often it appears to be the result of family alcoholism, it sometimes depends on arrest of development and fetal inflammation, but is more frequently an acquired condition. Not rarely children are affected after they have been able to speak. The majority of cases are caused by cerebral or cerebrospinal inflammation. According to Biedert, 55 per cent. are of that class, 28 per cent. are caused by infectious diseases (cerebrospinal meningitis, scarlatina, typhoid fever, diphtheria, also variola and measles), 3.3 per cent. by injuries, and only 2.5 per cent. are original ear affections. Thus many of the congenital cases, and most of the acquired, are preventable. More and more will our deaf-mute institutions avail themselves of this knowledge, and will learn how to teach their children not only how to read and write, but also how to hear.

Not to the same, but to a great extent, pediatrics and *ophthalmology* join hands. Infectious diseases, such as diphtheria, affect the conjunctiva and sometimes the cornea. Syphilis of the cornea, with or without chronic iritis, is known in the form of parenchymatous or diffuse keratitis. A frequent tumor in the eye of the young is glioma, and frequent symptomatic anomalies are strabismus and nystagmus—both of them the results of a great many and various external or internal causes, with sometimes difficult diagnoses.

The connection of pedology with *dermatology* is more than skin deep; some of the most interesting problems of the latter must be studied on antenatal and postnatal lines. The congenital absence of small or large parts of the surface is probably due to amniotic adhesions; seborrhea and the mild form of lichen, also the furunculosis of infant cachexia and atheroma, to the rapid development, in the second half of intrauterine life, of the sebaceous follicles; ichthyosis, to the same and to a hypertrophy of the epidermis and the papillæ of the corium, sometimes with dilatation of their blood-vessels and with sclerosis of the connective tissue. Congenital anomalies, such as lipoma, sarcoma, nevus pigmentosus, open all the questions of the embryonal origin of neoplasms; and the eruptions on the infant surface unclose to the specialist the subject of infectious diseases. We recognize in the pemphigus of the palms and soles syphilis; in herpes, gangrene, and in what I have described as chronic neurotic pemphigus, the irritable nervous system; in eczema, constitutional disturbances of the nutrition; in erythema, local irritation or intestinal autoinfection; in isolated or multiple forms, ranging between hyperemia and exudation, the effect of local irritation or the acute or chronic influence of drugs. A dermatologist who knows no embryology or pedology, a pediatrist who knows no dermatology, is anything but a competent and trustworthy medical practitioner.

The diseases of the *muscles* interest the pediatrist, the surgical specialist, the orthopedist, the neurologist, to an equal extent. Many forms of myositis are of infectious origin. Amongst the special forms of muscular atrophy it is the hereditary variety which concerns the first. The spinal neuritic atrophy, the myogenous progressive dystrophy, including the socalled pseudohypertrophy, Thomson's congenital myotonia, and (atrophy) the defects of muscles—mainly of the pectoral, but also the trapezius, quadriceps, and others—no matter whether they are primary or myogenous (this probably always when there is a complication with progressive dystrophy), are of special interest to all. I need not do more than mention torticollis in order to prove that neither the special pediatrist, nor the special orthopedist, nor the general surgeon, can raise the claim of ownership.

The relations of pediatrics to *forensic medicine* are very close. Nothing is more apt to demonstrate this than the immense literature in every language on infanticide and all the questions of physiology, physics, and chemistry connected with that subject. The monographs and magazine essays of the last two centuries written on the value or the fallacy of the lung test in the dead newly-born would fill a small library. Much attention has been paid by physicians and by forensic authors to lesions and fractures of the newly-born head, and to anomalies of the female pelvis causing them. Apparent death of the newly-born and the causes of sudden death in all periods of life have been studied to such an extent as to render negative results of police investigation and of autopsy reports less numerous from year to year. Most sudden deaths receiving the attention of the authorities occur in the young. There were (Wm. Wynn Westcott in *Brit. Med. Journ.*, November 7, 1903) in England and Wales during ten years 15,009 overlain infants; in 1900, 1,774. In Liverpool, out of 960 inquests there were 143 on babies that had died of such suffocation by accident or malice aforethought; in London, in 1900, 615; in 1901, 511; in 1902, 588. In London they had annually 8,000 official inquests, one of fourteen of which was on overlain infants. The etiology of sudden deaths would be far from complete, indeed the most difficult questions could not be solved except by the facilities furnished by the observations on the young. Foreign bodies in the larynx, beans, shoe-buttons, and playthings generally, even ascarides (Bouchut), bones and pieces of meat aspirated during vomiting, acute edema of the glottis, aspiration of a long uvula, or of the retracted tongue, the rupture of a pharyngeal abscess or of a suppurating lymphoid body into the trachea, a sudden swelling of the thymus in the narrow space between the manubrium and vertebral column, which at best measures only 2.2 cm., even a coryza in the narrow nose of a small infant filled or not with adenoids—are causes of sudden death.

The *nervous system* furnishes many such cases. It is true there is no longer a diffuse interstitial encephalitis, such as Jastrowitz would have it, nor is the hypertrophy of the brain so frequent by far as Hüttenbrenner taught, but there are sudden collapses and deaths by falls on the abdomen, by sudden strangulation of large herniæ and other shocks of the splanchnic nerve. There are sudden and unexplained deaths in unnoticed attacks of convulsions, in the first paralytic stage of laryngismus stridulus, in glottic spasms from whatever cause, in the paralysis—or, according to Escherich, laryngospasm—of what since Paltauf has been denominated status lymphaticus, in cerebral anemia, no matter whether it is the result of exhaustion or, as Charles West taught us sixty years ago, from the mere change of position of a pneumonic or otherwise sick baby, when suddenly raised from its bed. Or, death may occur suddenly (a very frequent occurrence) in the heart failure of parenchymatous degeneration of the heart muscle as it occurs in and after diphtheria, influenza, and other infectious diseases, or in the acute sepsis of appendicitis and other intraperitoneal affections, whether recognized or not. For the absorbing power, even of the normal peritoneum, is enormous. Of a very acute infection ("infectio acutissima"), Wernich spoke as early as 1883.

In gastroenteritis, the terminating bronchopneumonia may destroy life quite suddenly; there is a capillary bronchitis of the very young with no cry, no moan, and no cough, but with sudden death; there are in extreme atrophy fatal emboli into the pulmonary, sometimes renal, more often cerebral, arteries. There are the cases of uremic convulsions, sudden, with sudden death, which are often taken to be merely reflected or "providential," because the frequency of acute nephritis in the newly-born and the infant, with its fever and its uremia, in spite of the publications of Martin and Ruge, Virchow, Orth, Epstein, and my own, is not yet fully appreciated. That is so much the more deplorable as the diagnosis of nephritis at any age is readily made by the examination of the urine, which is so easy to obtain in the young. Other suddenly fatal conditions, such as the acute or chronic sepsis I mentioned before, often quite unsuspected, entering through the umbilicus, the intestine, or the middle ear, are quite frequent.

I have been careful not to mention any cause of death that may just as well be and has been studied in the adult: hemorrhages, the many forms of sepsis of later periods of life, poisons, such as carbolic acid and iodoform, intense cold or heat, insolation, etc., for it is my duty to exhibit the relation to forensic medicine of pediatrics only. Forensic medicine has to guard the interests of all. Nothing in all medicine is more difficult than the discovery of the cause of death. The best knowledge of the advanced practitioner, of the pathologist, of the chemist, of the bacteriologist, of the obstetrician, should be at the service of the people. Every European country understands that and acts on that knowledge. Our own Massachusetts has broken away from the coroner's institution, which was a fit authority for a backwoods municipality, but is so no longer for a cultured people of eighty millions. Now and then, even an expert, or a body of experts, *does not* succeed in discovering the cause of death. What shall we say of a system which *now and then does* discover the hidden cause of a sudden death? When the New York State Legislature half a year ago passed a bill abolishing the no longer competent office of coroner, our good cultured mayor, a gentleman and author, vetoed it for the reason that the new law was not perfect. It was not pronounced perfect by anybody; no law is nor ever was. That is why it appears he prefers something that always was and is, and always will be perfect, namely, the absurd incompetency and anachronism of the coroner's office. That is perfect. I have not hesitated to express myself strongly and positively, for I have been called upon to speak to you about the relation of pediatrics to other sciences and arts—politics included, than which there is no more profound, practical and indispensable science and art. The greatest historical legislators understood that perfectly well, when they knew how to blend hygiene and religion with their social and political organizations.

One of the greatest questions which concerns at the same time the practical statesman, the humanitarian and the pediatrist, is that of the *excessive mortality* of the young. The Paris Academy of Medicine enumerated in its discussions of 1870 the following amongst its causes: Poverty and illness of the parents, the large number of illegitimate births, inability or unwillingness on the part of mothers to nurse their offspring, artificial feeding with improper material, the ignorance of the parents in regard to the proper food and hygiene, exposure, absence of medical aid, careless selection of nurses, lack of supervision of baby farms, general neglect and infanticide. *If there be* anybody who is not quite certain about the relationship of sciences and arts, he will still be convinced of the correlation and cooperation of ignorance, indolence, viciousness and death, and shocked by the shortcomings of the human society to which we belong. Most of them should be avoided. Forty per cent. of the mortality of infants that die before the end of the first year takes place in the first month. That is mostly preventable. A few years ago the mortality of the infants in the Mott Street barracks of New York City was 325 *per mille.* Much of it is attributable to *faulty diet.**

Amongst those who believe in the omnipotence of chemical formulæ, there prevails the opinion that a baby deprived of mother's milk may just as readily be brought up on cow's milk; that is easily disproved. In Berlin they found that amongst the cows'-milk fed babies under a year the mortality was six times as great as amongst breast-fed infants. Our own great cities gave us similar, or slightly smaller, proportions, until the excessive mortality of the very young was somewhat reduced by the care bestowed on the milk, introduced both into our palaces and tenements. Milk was examined for bacteria, cleanliness, and chemical reaction. It was sterilized, pasteurized, modified, cooled, but no cow's milk was ever under the laws of nature changed into human milk, and with better milk than the city of New York ever had, its infant mortality was greater this summer than it has been in many years.

That hundreds of thousands of the newly-born and small infants perish every year on account of the absence of their natural food is a fact which is known and which should not exist. Why do we kill those babies or allow them to be killed? Why is it that they have no breast milk? A large number of women work in fields, still more in factories. That is why their infants cannot be nursed, are farmed out, fed artificially, with care or without it, and die. It is the misrule prevailing in our social conditions which compels them to withhold milk from the infant while they are working for what is called bread for themselves and their families. Many of these women, it is true, would not have been able to nurse their newly-born, for their own physical condition was always incompetent. The same may be said of women in all walks of life. Insufficient food, hard work, care, hereditary debility and disease, tuberculosis, alcoholism of the woman's own parents, modified syphilis or nervous diseases in the family—aye, the inability of her own mother to nurse her babies, are ever so many causes why the mother's fountain should run dry. Statistics from large obstetrical institutions (Hegar) prove that only about 50 per cent. of women are capable of nursing their offspring for merely a few weeks. In the presence of such facts what are we to say of the refusal of well-situated and physically competent women to nurse their infants? I do not speak of the "400," I mean the 400,000 who prefer their ease to their duty, their social functions to their maternal obligations, who hire strangers to nurse their babies, or worse yet, who make-believe they believe the claims of the infant food manufacturers, or are tempted by their own physicians to believe that cow's milk casein and cow's milk fat may be changed into woman's casein and fat, that chemistry is physiology, that the live stomach is like a dead laboratory bottle, that the warmth of the human bosom and that of a nursing flask are identical, and that cow's milk is like human milk when it carries the tradesmark "Certified," or "Modified." Physiological chemistry itself teaches that the phosphorus combinations in woman's milk, in the shape of nuclein and lecithin are not contained in cow's milk, and that the large amounts of potassium and sodium salts contained in cow's milk are dead weights rather than nutrients, and particularly the large amount of calcium phosphate occurs in a chemical, not in a physiological combination. Only lately, by no means for the first time, Schlossmann and Moro (*Münch. med. Woch.*, 1903, No. 14), have again proved that the albuminoids of woman's and cow's milk are essentially different, both in their lactalbumin and the globulin, and Escherich and Marfan, that every milk has its own enzymes.

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* Measures taken for the purpose of obtaining wholesome milk are not quite new. Regulations were given in Venice, 1599, for the sale of milk. Milk and its products of diseased animals were forbidden. The Paris municipality of 1792 enjoined the farmers to give their cows healthy food. Coloring and dilution of milk were strictly forbidden, and in 1792 they knew in France how to punish transgressors.

The quantitative and many of the qualitative differences of cow's and human milk have been known a long time. No addition or abstraction of salts, no addition of cow's fat will ever change one into the other. But it appears that every new doctor and every new author begins his own era. There is for most of modern writers no such thing as the history of medicine or of a specialty, or respect of fathers or brothers. In modern books and essays you meet with footnotes and quotations of the productions of yesterday that look so erudite, but also with the new discoveries of old knowledge which you would recognize if the quotation marks had not been forgotten by accident. So it has happened that many learn for the twentieth time that the knowledge of the minimum amount of required food is a wholesome thing, that the amount of animal fat in infant food is easily overstepped, that we have discovered that the Dutch had a clever notion when they fed babies on buttermilk with reduced fat; we are even beginning to learn what our old forefathers practised a hundred years ago, and physiologists taught a third of a century ago—namely, that the newly-born and the very young infant not only tolerate small quantities of cereals but that they improve on it. Indeed, the names of Schiller, Korowin, and Zweifel have been rediscovered. We have also learned—just lately, it appears—what was always known, that morning and night, idleness and work, health and illness, while altering the chemical composition of woman's milk, do not necessarily affect its wholesome character. We are beginning to learn that it is impossible to feed a baby on fanatical chemical formulæ, for they are not prescribed by Nature, which allows latitude within certain limits. We are even beginning to learn that if that were not so there would be no artificially-fed babies alive, and possibly very few participants in the St. Louis Congress of Arts and Sciences.

The inability or reluctance of women to nurse their own infants is a grave matter. From a physical, moral, and socio-political point of view there is only one calamity still graver, that is to refuse to have children at all. It undermines the health of women, makes family life a commercial institute or a desert, depopulates the child world, reduces original Americans to a small minority, and leaves the creation of the future America in the hands of twentieth century foreigners. The human society of the future will have to see to it that no poverty, no cruel labor law, no accident, no luxurious indolence, must interfere with the nursing of infants. I believe in the perfectibility of the physical and moral conditions of the human race. That is why I trust that society will find means to compel able-bodied women to nurse their own infants. Infants are the future citizens of the republic. Let the republic see that no harm accrue from the incompetence or unwillingness to nurse. Antiquity did not know of artificial infant feeding. The first information of its introduction is dated about 1500. Turks, Arabs, Armenians, and Kurds know of no artificial feeding today. It takes modern civilization to expose babies to disease and extinction. I know of no political or social question of greater urgency than that of the prevention of the wholesale murder of our infants caused by the withholding of proper nutriment. May nobody, however, feel that all is accomplished when an infant has finally completed his twelve months. Society and family owe more than life—they owe good health, vital resistance, and security against life-long invalidism.

But even willing mothers may have no milk. We require a stronger, healthier race, and one that physically is not on the down grade. The nursing question is a social and economic problem like so many others, like the childbearing question, that confront modern civilization.

We are building hospitals for the sick of all classes, and insist upon their being superior to the best private residences; asylums for the insane, neuropathics, and drunkards; nurseries and schools for epileptics, cretins and idiots; refuges for the dying consumptives; and sanatoria for incipient tuberculosis. We are bent upon curing and upon preventing. Do we not begin at the wrong end? We allow consumptives and epileptics to marry and to propagate their own curse. We have no punishment for the syphilitic and the gonorrheic who ruins a woman's life and impairs the human race. Man, however, should see that his kind must not suffer. One-half of us should not be destined to watch, and nurse, and support the other half. Human society and the State have to protect themselves by looking out for a healthy, uncontaminated progeny. Laws are required to accomplish this; such laws as will be hated by the epileptic, consumptive, the syphilitic, and the vicious. No laws ever suited the degenerates against whom they were passed, and it is unfortunate that while health and virtue are as a rule not contagious, disease and vice are so to a high degree.

Modern *therapeutics,* both hygienic and medicinal, has gained much by the close observation of what is permitted or indicated or required in early age. Since it has become more humane (remember it is hardly a century since Pinel took the chains off the insane in their dungeons, and not more than half a century since I was taught to carry my venesection lancet in my vest pocket for ready use) and more scientific, so that whatever is outside of strict biologic methods is no longer "a system," but downright quackery—the terrible increase of the latter as a world-plague is deemed by rational practitioners and the sensible public an appalling anachronism. It appears that the States of the Union are most anxious (and have been partially successful) to rid themselves of it, while some at least of the nations of Europe are greater sufferers than we. According to the latest statistics, there is one quack to every physician in Bavaria and Saxony; ten quacks in Berlin, with its emperor and other accomplishments, to every forty-six physicians. Its general population has increased since 1879 by 61 per cent.; the number of physicians, 170, 2 per cent.; that of the quacks, 1600 per cent.

One of the main indications in infant therapeutics is to fight anemia, which is a constant danger in the diseases of the young, for the amount of blood at that age is only one-nineteenth of the whole body weight, while in the adult it is one-thirteenth. The newly-born is particularly exposed to an acute anemia. His blood weighs from 200 to 250 grams. It is overloaded with hemoglobin which is rapidly eliminated, together with the original excess of iron. This lively metabolism renders the infant very amenable to the influence of bacteria, and the large number of acute, subacute or chronic cases of sepsis is the result. Besides, the principal normal food is milk, which contains but little iron. That is why pediatrics is most apt to inculcate the lessons of appropriate posture, so as not to render the brain suddenly anemic, and of proper feeding and of timely stimulation before collapse tells us we are too late, and of the dangers of inconsiderate depletion. The experience accumulated in pediatric practice has taught general medicine to use small doses only of potassic chlorate; large doses of strychnin and alcohol in sepsis, of mercuric bichlorid in croupous inflammations, of heart stimulants, such as digitalis, when a speedy effect is wanted, of arsenic in nervous diseases, of potassic iodid in meningitis; it has warned practical men of the dangers of chloroform in status lymphaticus;* it has modified hydrotherapeutic and balneological practice, and the theories of hardening and strengthening according to periods of life, and to the conditions of previous general health.

The appreciation of electricity as a remedy has been enhanced by obstetricians, pediatrists and general practitioners. It is but lately that we have been told (P. Strassmann, *Samml. Klin. Vortr.*, 1903, No. 353) that a newly-born and an infant up to the third week are perfectly insensible to very strong electrical currents. The incompetency of mere experimental work, not corrected or guided by practice, cannot find a better illustration, for there is no more powerful remedy for asphyxia and atelectasis than the cautious use of the interrupted or of the broken galvanic current.

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* In the meeting of the Society for the Study of Disease in Children, May 27, 1904, Mr. Thompson Walker alluded to the collection of 10 cases with status lymphaticus in which death had occurred at the commencement of chloroform administration, or during it, or immediately after the operation. In addition to the usual changes, a hyperplasia of the arteries had been noted, leading to narrowing of the lumen.

The domain of preventive therapeutics expands with the increased knowledge of the causes of disease. That is why immunizing, like curative serums, will play a more beneficent part from year to year, and why the healthy condition of the mucous membrane of the nose, mouth, and pharynx, which I have been advising these forty years as a prevention of diphtheria, has assumed importance in the armamentarium of protection against all sorts of infectious diseases.

Amongst the probabilities of our therapeutical future I also count the prevention of congenital malformations, which, as has been shown, are more numerous than is generally known or presumed, and are often the result of an intrauterine inflammation. In a recent publication F. von Winckel (*Samml. Klin. Vortr.*, 1904, No. 373) emphasizes the fact that the general practitioner or the pathologic anatomist sees only a small number, that indeed the majority is buried out of sight, or is preserved in the specimen jars of the obstetrician. The known number of malformations compared with that of the normal newly-born varies from one to thirty-six, or to one hundred and two or more. They are met with in relatively large numbers on the head, face and neck—altogether in 53.2 per cent. of all the 190 cases of malformation observed in Munich during twenty years. A number of them is the result of heredity, of syphilis or other influences. How many are or may be the result of consanguineous marriages will have to be learned. In all such cases the treatment of the parents or the prohibition of injurious marriages should always be insisted upon. The number of those recognized as due to amniotic adhesions or bands is growing from year to year. Kümmel could prove that of 178 cases, 29 were certainly of that nature. External malformations have long been ascribed to them; proximal malformations, such as auricular appendices, harelip, anencephalia, cyclopia, flattening of the face, anophthalmia, hereditary polydactylia (Ahlfeld and Zander, *Virchow's Archiv.*, 1891), and lymphangioma of the neck, have been found to be caused by amniotic attachments of filaments. Is it too much to believe that the uterus, whose internal changes, syphilitic or others, are known to be very accessible to local and general medication, should be so influenced by previous treatment that malformations and fetal deaths will become less and less frequent?

The problem of the health and hygiene mainly of the older child refers to more than its food. The *school* question is in the foreground of the study of sanitarians, health departments, physicians, and pedagogues. Its importance is best illustrated by the large convention which was organized in Stuttgart, April, 1904, as an International Congress for School Hygiene. Pediatrists, pedagogues, and statesmen formulated their demands and mapped out future discussions. Rational pediatrics would consider the following question:—Is it reasonable to have the same rules and the same daily sessions for children of eight and perhaps of fifteen years, and for adolescents? Certainly not. The younger the child the shorter should be the session, the longer and more frequent the recesses. There should be no lessons in the afternoon, or only mechanical occupations, such as copying, or light gymnastics. There should be no home lessons.

The problem of overburdening was carefully considered by Lorinser in 1836, and by many others since. It deals with the number of subjects taught, the strictness and frequency of official examinations, and should consider the overcrowding of schoolrooms. We should try to answer the question whether neuroses are more the result of faulty schooling or of original debility, heredity, underfeeding, lack of sleep, bad domestic conditions, or all these combined. In Berlin schools they have begun to feed the hungry ones regularly with milk and bread. No compulsory education will educate the starving. The child that showed his first symptom of nervousness when a nursling, the child with pavor nocturnus, or that gets up tired in the morning, or suffers from motor hyperesthesia, pointing or amounting to chorea, unless relieved, instead of being punished by an uninformed or misanthropic or hysterical teacher, gets old or breaks down before the termination of the school term, or of school age. There should be separate classes for the feeble, for those who are mentally strong, or weak, or of medium capacity. All of such questions belong to the domain of the child's physician, the physician in general. The office of school physician is relatively new.

Whatever we have done in establishing it in America has been preceded by countries to which we are not in the habit of looking for our models. Bulgaria and Hungary have no schools without physicians. On the other hand, Vienna has none for its 200,000 school children. It is reported that the aldermen refused to appoint one. One of them objected for the reason that the doctor might be tempted to examine the Vienna lassies too closely. His business would be, and is, to look out for the healthfulness of the school building, its lighting, warming, cleanliness, the cleanliness of the children and their health, and that of the teachers. A tubercular teacher is a greater danger to the children than those, who rarely expectorate, to each other. He would take cognizance of the first symptoms of infectious diseases, examine eyes, ears and teeth, and inquire into chronic constitutional diseases, such as rachitis and scrofula in the youngest pupils. He might undertake anthropometrical measurements and benefit science while aiding his wards. He would be helped in all these endeavors by the teachers who must learn to pride themselves on the robust health of their pupils, as they now look for the accumulation of knowledge which may be exhibited in public examinations.

They would soon learn what Christopher demonstrated, that physical development, greater weight, and larger breathing capacity, correspond with increased mental power, joining to this the advice that a physical factor as well as the intellectual one, now entirely relied upon, should be introduced in the grading of pupils. (Charles F. Gardiner and H. W. Hoagland, Growth and Development of Children in Colorado—Transactions of the American Climatological Association, 1903.)

Our knowledge of the physiology and pathology of the *nervous system* of all ages would be defective without lessons derived from the fetus and infant. Amongst the newly-born we have often to deal with arrests of development, such as microcephalus, or with that form of fetal meningitis or of syphilitic alterations of blood-vessels which may terminate in chronic hydrocephalus. When the insufficient development of reflex action in the newly-born up to the fifth or sixth week has passed, the very slow development of inhibition during the first half year or more, together with the rapid increase of motor and sensitive irritability explains the frequency of eclampsia and other forms of convulsions. Many of them require, however, an additional disposition, which is afforded either by the normal rapid development of the brain, or the abnormal hyperemia of rachitis. The last twenty-five years have increased our knowledge considerably in many directions. Congenital or premature, complete or partial, ossification of the cranial sutures lead mechanically to idiocy, or paralysis, or epilepsy; it is a consolation, however, to know that the victims of surgical zeal are getting less in number since operators have consented to fear death on the operating table, and thoughtful surgeons have come to the conclusion to leave bad enough alone. In the very young the fragility of the blood-vessels, the lack of coagulability of the blood, the large size of the carotid and vertebral arteries, the frequency of trauma during labor and after birth, the vulnerability of the ear and scalp, contribute to the frequency of nervous diseases, which before the fifth year amounts to a high percentage of all the cases of sickness. Rapid exhaustion leads to intracranial emaciation and thrombosis, the socalled hydroencephaloid of gastroenteritis. The large size and number of the lymph vessels of the nasal and pharyngeal cavities facilitate the invasion into the nerve centres of infections which show themselves as tuberculous meningitis, cerebrospinal meningitis, and polioencephalitis, or more so, poliomyelitis, and as chorea of socalled rheumatic—mostly streptococcic—origin. Nose and throat specialists, as well as anatomists, have contributed to our knowledge on these points—another proof of the intimate dependency of all parts of medicine upon one another. Now all these conditions are not limited to early life, but their numerical preponderance at that time is so great that it is easy to understand that general nosology could not advance without the overwhelming number of well-marked cases amongst children. Amongst them are the very numerous cases of epilepsy. They escape statistical accuracy, for many an epileptic infant or child dies before his condition is observed, or diagnosticated; a great many cases of petit mal, vertigo, dreamlike states and somnambulism, fainting, habit-chorea, truancy, imbecility, incompetency, or occasionally wild attacks of mania, or the perversity of incendiarism, or in older children religious delirium, even hysteric spells, are overlooked or perhaps noticed or suspected by nobody but the family physician; or, in the cases of the million poor, by nobody. They are cared for or neglected at home, and the seizure is taken to be an eclamptic attack due to bowels, worms, colds, and teeth, exactly like three hundred years ago.

Of equal importance in this disease to the pediatrist, the pedagogue, the psychiatrist, the judge, the statesman, no matter whether in office or a thoughtful citizen, is the influence of heredity. The old figures of Echeverria, which have been substantiated by a great many observers, tell the whole story. One hundred and thirty-six epileptics had 553 children. Of these, 309 remained alive; 78 (25 per cent.) were epileptic; how many of the 231 that died had some form of epilepsy or would have exhibited it nobody can tell. He observed a dozen cases in one family. While in his opinion 29.72 per cent. showed a direct inheritance from epileptic parents, Gowers has a percentage of 35, and Spratling, who has lived among epileptics nearly a dozen years, 66 per cent.

Epilepsy is acknowledged to be one of the causes of imbecility, or genuine idiocy. In very many instances it should be considered as a coordinate result of congenital or acquired changes in the skull, the brain, and its meninges, and particularly the cortex. In a single idiot institution, that of Langenhagen, 15 per cent. to 18 per cent. of the 395—668 inmates were epileptic; in another, Dalldorf, 18.5 per cent. to 24.3 per cent. of 167—344; in a third, Idstein, 36 per cent. of 101 (Binswanger, in Nothnagel, *Syst. Path. u Ther.,* Vol. XII., 1,310).

Its main causes are central. External irritations, worms, calculi, genital or nasal reflexes, may be occasional proximate causes. But cauterization of the nares, and still more, circumcision, and clitoridectomy prove more the helplessness or recklessness of the attendant than the possibility of a cure. The individual cases of recovery by the removal of clots, bones, or tumors, are great and comforting results, but if epilepsy and its relations are ever to disappear, it is not the knife of the surgeon, but the apparatus of human foresight and justice that will accomplish it. Most of the causes of epilepsy are preventable. To that class belong syphilis and alcoholism in various generations, rachitis, tuberculosis and scrofula, many cases of encephalo-meningitis, and most cases of otitis. A question is attributed to a royal layman, "If preventable, why are they not prevented?" If there is a proof of what Socrates and Kant said, namely, that statesmanship cannot thrive without the physician, it is contained in the necessities of epilepsy. Prevention, preventives, and hygienic, medicinal, and surgical aids have to be invoked, unfortunately with slim results so far.

The influence of hereditary syphilis on the diseases of the nervous system has been studied these twenty years, both by neurologists and pediatrists. Its results are either direct—that means characteristically syphilitic—or metasyphilitic—that means merely degenerative. Hoffmann cured a case of syphilitic epilepsy in a girl of nine years in 1712. Plenk describes convulsions and other nervous symptoms depending on hereditary syphilis, and Nils Rosen de Rosenstein describes the same in 1781. The literature of the later part of the eighteenth, and of the first half of the nineteenth century, is silent on that subject, though the cases of affections of the nervous system depending on hereditary syphilis are very frequent (13 per cent. of all the cases, according to Rumpf, *die Syph. Erk. d. Nervens,* 1889). Jullien (*Arch. Gén.,* 1901) reports 206 pregnancies in forty-three syphilitic matrimonies. Of the children, 162 remained alive. Half of them had convulsions or symptoms of meningitis.

According to Nonne (*die Syph. d. Nervens,* 1902) hereditary syphilis differs from the acquired form in this—that several parts of the nervous system are affected simultaneously; and that arteritis, meningitis, gummata, and simple sclerosis occur in combination. Simple cerebral meningitis and apoplexies are very rare. Encephalitis is more frequent. Probably spinal diseases are more frequent, according to Gilles de la Tourette, Gasne, Sachs, and others. Tabes dorsalis is not often found, but may rather depend on an atavistic syphilitic basis; for altogether the nerve syphilis of the second previous generation as a cause of disease in the young is not very rare. (E. Finger, *W. Klin. Woch.,* 13, 1900.)

What we call neuroses are not infrequent in infants and children. Neuralgias are not so common as in the adult, but would be more frequently found if sought for. Even adipositas dolorosa has been observed in childhood. Hysteria is by no means rare, and its mono-symptomatic character, so peculiar to early age, adds to its nosological importance. Its early appearance is of grave import. Its often hereditary origin makes it a serious problem; under-alimentation or ill-nutrition, rachitis and scrofula, frequently connected with and underlying it, may make it dangerous and a fit subject for the study of educators, psychologists, judges, and all those whose direct office it is to study social and socialistic problems. Hysteria is not quite unknown amongst males, though the large majority are females.

Some of the vaso-motor and trophic disturbances are less, others more frequent, in the young than in the adult. Amongst 129 cases of akroparesthesia there is only one of Frankl Hochwart in a girl of twelve years, and one of Cassirer in a girl of sixteen. Scleroderma is met with mostly in mature life, but the cases of Neumann at thirteen days, and those of Cruse, Herxheimer, and of Haushalter and Spillmann, who observed 2 cases in one family, all of them when the infants were only a few weeks old, prove that the same influences which are at work in advanced age, namely, hereditary disposition, neuropathic family influence, low general nutrition, colds, trauma, and so on, may play their role in infant life. Nor are infant erythromelalgias numerous. Henoch saw one in a teething infant, Baginsky in a boy of ten, Heimann one in a girl of thirteen, Graves one in a girl of sixteen; that means 3 or 4 cases below thirteen or sixteen years of age, out of a number of 65 collected by Cassirer in his monograph. (*Die Vasomotorisch-trophischen Neurosen,* Berlin, 1901.) In half a century I have seen but one that occurred in early age, namely, in a boy of twelve, who got well with the loss of two toes. On the other hand, the symmetrical gangrene of Raynaud and the acute circumscribed edema of Milton and Quincke, 1882 (treated of by Collins in 1892), are by no means relatively rare in infancy and childhood. There are a few cases of the former that occurred in the newly-born. Two I have seen myself. There are those which have been observed at six months (Friedel), at nine months (De France), at fifteen months (Bjering), at eighteen months (Dick). In the year 1889 Morgan collected 93 cases, 13 of which occurred from the second to the fifth, 11 between the fifth and tenth, and 15 between the tenth and twentieth years. Amongst the 168 cases collected by Cassirer, 20 occurred below the fifth, 8 between the fifth and tenth, and 25 between the tenth and twentieth years of life. Like most nervous diseases, these cases had either congenital or acquired causes, amongst which a general neuropathic constitution, and the hereditary influence of alcohol, chlorosis, and anemia are considered prominent. Of acute circumscribed edema, 28 cases are found below nine years of age in Cassirer's collection of 160 cases, one of which at the age of one and a half months is reported by Crozer Griffith, one at three months by Dinckelacker. Again, hereditary influence is found powerful. Osler could trace the disease through five generations.

The connection of pediatrics with *psychiatry* is very intimate. Insane children are much more numerous than the statistics of lunatic asylums would appear to prove, for there are, for obvious reasons, but few insane children in general institutions. It is only those cases which become absolutely unmanageable at home that are entrusted to or forced upon an asylum. The example of the French, who more than fifty years ago had a division in the Bicêtre for mentally disturbed children, has seldom or not at all been imitated. Thus it happens that though not even a minority of the cases of idiocy become known, its statistics are more readily obtained than that of dementia of early life. Some of its physical causes or accompaniments have been mentioned—asphyxia with its consequences, ossification and asymmetrical shape of the cranium, accidents during infancy and childhood, neuroses that may be the beginning or proximate causes of graver trouble. Infectious diseases play an important part in the etiology of intellectual disorders. Althaus collected 400 such cases. They were mainly, influenza 113, rheumatism 96, typhoid fever 87, pneumonia 43, variola 41, cholera 19, scarlatina 16, erysipelas 11. In most of the cases there were predisposing elements, such as heredity and previous diseases, or over-exertion of long duration. The overworked brains of school children were complained of as adjuvant causes of lunacy by Peter Frank as early as 1804. We are as badly off, or worse, a hundred years later.

There is one ailment, however, that appears to hurt children less than it does adolescents or adults, that is masturbation. There are those cases, fortunately few, which depend on cerebral disease and original degeneracy, but in the large majority of instances masturbation, frequent though it be, has not in the very young the same perils that are attended by it later on when the differentiation of sex has been completed and is recognized. Babies under a year, and children under eight or ten will outlive their unfortunate habit, and do not appear to suffer much from its influence. Whatever is said to the contrary is the exaggeration of such as like to revel in horrors. The same exorbitant imagination is exhibited in other statements. What Lombroso and his followers have said of the faulty arrangement of the teeth, prognathic skulls, retracted nose, short and attached lobes of the auricle, as distinct symptoms of mental degeneracy, belongs to that class, and need not always be taken as the positive signs of insane criminality. There is so much poetical exaggeration and word painting in them that Lombroso and also Krafft-Ebing are the pets of the prurient lay public. In its midst there must be many who are anxious to believe with Lombroso that brown hair and eyes, brachycephalic heads, and medium size of the body characterize the insane criminal, if only for the purpose of scanning the hair and eyes and heads of their near friends and their mother-in-law's relatives.

It is certainly not true that, as Lombroso will have it, children are cruel, lazy, lying, thievish, just as little as according to him all savages are like carnivorous animals, and essentially criminal, while others are convinced that by nature they are amiable, like Uncas, and virtuous like Chingacook, and have been rendered savage only by the strenuousness of conquering immigrants. Nor is it true that the idiot brain is merely arrested at a stage similar to anthropoid, or even saurian development, for it is less arrest of development than the influence of embryonal or fetal disease, beside amniotic anomalies that cause the irregularities of the encephalon.

Amongst the worst causes of idiocy is cretinism, both the endemic and the sporadic. Every cretin is an idiot, not *vice versa.* The endemic form could be prevented by State interference which would empty the stricken valleys; the sporadic depends on thyroidism, with or without a shortening of the base of the skull, and is partially curable. The idiotism of cretinism causes a fairly uniform set of symptoms; that which depends on other causes exhibits varieties, though not so many as imbecility, which, too, should not be taken to be the result of a single cause. Osseous and cartilaginous anomalies about the nose are pointed out by William Hill, chronic pharyngitis and nasal polypi by Heller, enlarged tonsils by Kafemann in one-third of the cases, some pharyngeal or nasal anomaly in four-fifths by Schmid-Monnard. Adenoids are frequently found as complications. Operations to meet all these anomalies have been performed with improvement of the mental condition in some, of the physical in many more, mainly when the anomalies were complications only. But after all, we should beware of the belief in miracles and in infallible cures. Mainly the tonsils have been puffed up to be the chief causes of many human troubles and their removal a panacea. According to a modern writer, it prevents tuberculosis, but the prophet is a little too bold, for he adds that, with the exception of himself, there are very few able to accomplish it. Defective or diseased brains are frequent in most conditions. The former class allows even imbeciles to excel in some ways. In that class may be found calculating experts, chess-players, or mechanical draughtsmen.

Imbecile persons may be taught sufficiently to prepare for the simple duties of life. There are, however, many transitions between the complete imbecile, the mild imbecile, and the merely slow and dull. That is why the condition is frequently not appreciated. In his school the imbecile child is slightly or considerably behind his class, and the laughing-stock of the rest. As he is intellectually slow, so he is morally perverse or is made to become so. He knows enough to lie and libel, to run away from school, and from truant to become a vagrant. It is true it will not do to declare the imbecile *per se* identical with the typical criminal, but as many of them are illegitimate, or of defective or alcoholic parents, or maltreated at home, or diseased and deformed, they get, by necessity, into conflict with order and the law. Thompson found 218 congenital imbeciles among 943 penitentiary inmates, Knecht 41 amongst 1,214. When the imbecile is once a prisoner his condition is not liable to be noticed on account of the stupefying monotony of his existence.

What is more to be pitied, the fate of the immature or imbecile half-grown child that naturally acts differently from the normal, or the low condition of the State which, instead of procuring separate schools for the half-witted, or asylums, has nothing to offer but contumely and prison walls, and increasing moral deterioration? This is the stone instead of the bread of the Gospel.

Modern society has commenced, however, to mend old injustices. Every civilized country admits irresponsibility before the law below a certain age, and gradually the mental condition of the criminal is taken into consideration and made the subject of study. But still, thousands of children and adolescents are declared criminal before being matured. The establishment of children's courts is one of the things, imperfect though they be, that make us see the promised land from afar. When crime will be considered an anomaly, either congenital or acquired in childhood, or a disease; when society will cease to insist upon committing a brutality to avenge a brutality; when self-protection will take the place of revenge, and asylums that of State prisons—then we shall be a human, because humane, society.

CONCLUSIONS.

Pedology is the science of the young. The young are the future makers and owners of the world. Their physical, intellectual and moral condition will decide whether the globe will be more Cossack or more republican, more criminal or more righteous. For their education and training and capabilities, the physician, mainly the pediatrist, as the representative of medical science and art, should become responsible. Medicine is concerned with the new individual before he is born, while he is being born, and after. Heredity and the health of the pregnant mother are the physician's concern. The regulation of labor laws, factory legislation, and the prohibition of marriages of epileptics, syphilitics, and criminals are some of his preventive measures to secure a promising progeny. To him belongs the watchful care of the production and distribution of foods. He has to guard the school period from sanitary and educational points of view, for heart and muscle and brain are of equal value. It is in infancy and childhood, before the dangerous period of puberty sets in, that the character is formed, altruism inculcated, or criminality fostered. If there be in the commonwealth any man or any class of men with great possibilities and responsibilities it is the physician. It is not enough, however, to work at the individual bedside and in a hospital. In the near or dim future, the pediatrist, the physician, is to sit in and control school boards, health departments, and legislatures. He is the legitimate adviser of the judge and the jury, and a seat for the physician in the councils of the republic is what the people have a right to demand. Before all that can be accomplished, however, let the individual physician not forget what he owes to the community now. Mainly to the young men amongst us I should say, do not forget your obligations as citizens. When we are told by Lombroso that there is no room in politics for an honest man, I tell you it is time for the physician to participate in politics, never to miss any of his public duties, and thereby make it what sometimes it is reputed not to be in modern life—honorable. A life spent in the service of mankind, be our sphere large or narrow, is well spent. And never stop working. Great results demand great exertions, possibly sacrifices. After all, whether everything in science and politics that now is our ideal will be accomplished, while we live or after we shall be gone, we shall still leave to our progeny new problems.

SHOULD BICARBONATE OF SODA BE ADDED TO AN INFANT'S FOOD AS A ROUTINE MEASURE?

BY GODFREY R. PISEK, M.D.,

Professor of Diseases of Children at the University of Vermont; Lecturer on Diseases of Children at the New York Post Graduate Medical School and Hospital.

In many of the text-books and articles on Infant Feeding it is stated as a fundamental principle that breast milk is amphoteric or alkaline and cow's milk amphoteric or acid in reaction; or, to state it in a different way, a strip of blue litmus paper is turned slightly red by both breast milk and cow's milk and a strip of red litmus paper is turned slightly blue by both—the amphoteric reaction; or sometimes a piece of red litmus is rendered a deeper blue by breast milk and a piece of blue litmus paper is turned a deeper red by cow's milk.

On account of this slight difference from breast milk it has been taught that something should be added to cow's milk to make it turn red litmus paper blue before it should be used in feeding infants. For this purpose many of the text-books state that one to two grains of bicarbonate of soda should be added to each ounce of the infant's food—two grains for a young infant and one grain for an older infant; or, that five to ten per cent. of the feeding mixture should consist of lime water (that is, one to two ounces to a twenty-ounce feeding mixture). Some of the writers say that these additions are to overcome the acidity of the milk or no reason for their use is given.

A young infant taking twenty ounces of food would receive forty grains of bicarbonate of soda or two ounces of lime water, which contain not far from one-and-a-half grains of calcium hydrate. The forty grains of bicarbonate of soda will neutralize about eighteen grains of absolute hydrochloric acid and the two ounces of lime water about one-and-a-half grains or about one-twelfth as much. This shows that in selecting the substances to be added to the cow's milk to make it turn red litmus paper blue, no attention is paid to their relative value for neutralizing acids.

The food for an infant taking only twenty ounces would probably not contain more than 0.75 to 0.8 per cent. proteids; about one-fifth of it would be milk. In other words there would not be more than four ounces of milk in the mixture. If the diluent was water, it would not be acid and therefore only the acidity of the milk would have to be overcome. This leaves forty grains of bicarbonate of soda to four ounces of milk or ten grains to the ounce. A quart of milk would need three hundred and twenty grains.

According to Russell, "when the acidity reaches 0.4 per cent. milk begins to taste sour. Incipient curdling takes place at about 0.6 per cent., and after this, bacterial development is checked altogether. The formation of acid goes on, however, until 0.8 to 1.0 per cent. is reached."

A quart of milk of 0.8 per cent. acidity would contain about one hundred and twenty grains of lactic acid; four ounces about fifteen grains. About ninety grains of lactic acid are neutralized by about 84 grains of bicarbonate of soda or practically grain for grain. Therefore fifteen grains of bicarbonate of soda would neutralize the acidity of the four ounces of milk in the infant's food if it was sour when used and there would be left from the forty grains about twenty-five grains for further use. In other words there is added to fresh cow's milk two-and-one-half times as much bicarbonate of soda as would be needed to neutralize it if it was sour.

The addition of the bicarbonate of soda to acid liquids causes a brisk effervescence of gas. This phenomenon is not observed when the soda is added to fresh cow's milk or to the infant's food. The addition of acid to the food promptly causes effervescence, which proves the presence of the unchanged bicarbonate of soda in the food. There was therefore no perceptible amount of acid in the food, that needed to be neutralized. It is clear, then, that as far as the acidity of the milk is concerned there is no necessity for the addition of the soda.

It is generally accepted by physiologists that gastric digestion takes place only in an acid medium and that the normal gastric juice of an adult contains about 0.2 per cent. hydrochloric acid. An adult on a milk diet would need about two quarts of milk daily and if bicarbonate of soda was added in the same proportion as for the infant, six hundred and forty grains would be needed. Before any gastric digestion of the milk could take place the soda would have to be disposed of. It would require three hundred and twenty ounces (twenty pints) of normal gastric juice to do this, unless a hyperacid secretion appeared, or the bicarbonate of soda was removed by absorption and excretion. In any event a perversion of the digestive process would result and it is well known that the continued use of antacids produces a hyperacidity in the stomach.

The forty grains of bicarbonate of soda in the infant's food would require about twenty ounces of gastric juice of an adult for its neutralization. But physiologists tell us that the secretion of the infant's stomach is not as acid as that of the adult, so a much larger quantity would have to be secreted by the infant to make up for its lack of acidity. Besides this, the action of the rennet ferment of the stomach is prevented by the presence of the bicarbonate of soda especially if the food has been heated. It will now be evident that the effect of adding bicarbonate of soda to the food is to prevent gastric digestion.

The whole purpose of artificial infant feeding is not alone to satisfy the infant's hunger. It is expected that the infant will grow to be a well-developed and vigorous adult, but this result cannot be attained unless suitable food is supplied. What, then, should be said of a method of infant feeding which begins at birth and all through infancy systematically defeats every attempt of the stomach to perform its function, or perverts it? Is it scientific? Could any physiologist approve of it? Only recently the New York Agricultural Experiment Station published a bulletin calling attention to the bad effects on young chickens that result from adding ground oyster shells to their food. These shells are principally carbonate of lime and it was suggested that the bad effects might be due to their neutralizing the acid of the gastric juice. Whatever the true explanation may be, the chicks developed much better when there was no antacid in their food than when it was present.

While there is no doubt that the addition of bicarbonate of soda to cow's milk will cause it to turn red litmus paper blue and often relieve temporary gastric symptoms, still is it not going too far to make these observations the basis of scientific infant feeding?

250 East 72d Street.

Amaurotic Family Idiocy.—Sachs reports an additional case of this rare condition, with autopsy. He was the first to describe the disease. The condition is due to an affection of the central gray substance of the brain and spinal cord. A simultaneous degeneration of the white fibres of the anterior and lateral tracts is regarded as secondary. Sachs does not regard the degenerative changes as of a toxic origin, but as due to developmental defects which do not come to the surface until a certain age has been reached.—*New York Medical Journal and Philadelphia Medical Journal.*

Clinical Memoranda.

TOTAL ABSENCE OF PATELLÆ IN A YOUNG CHILD.

BY HERMAN F. SENFTNER, A.B., M.D.,
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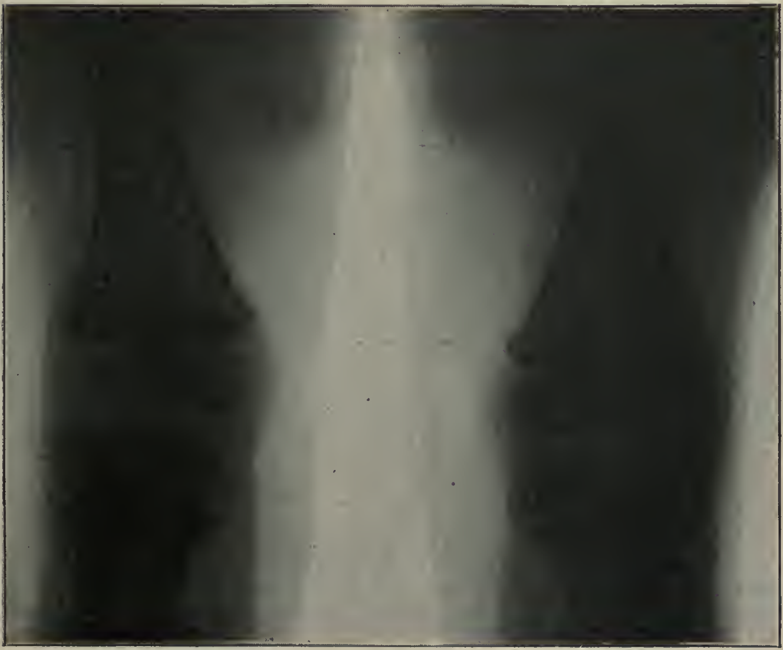
West Side German Dispensary,
New York.

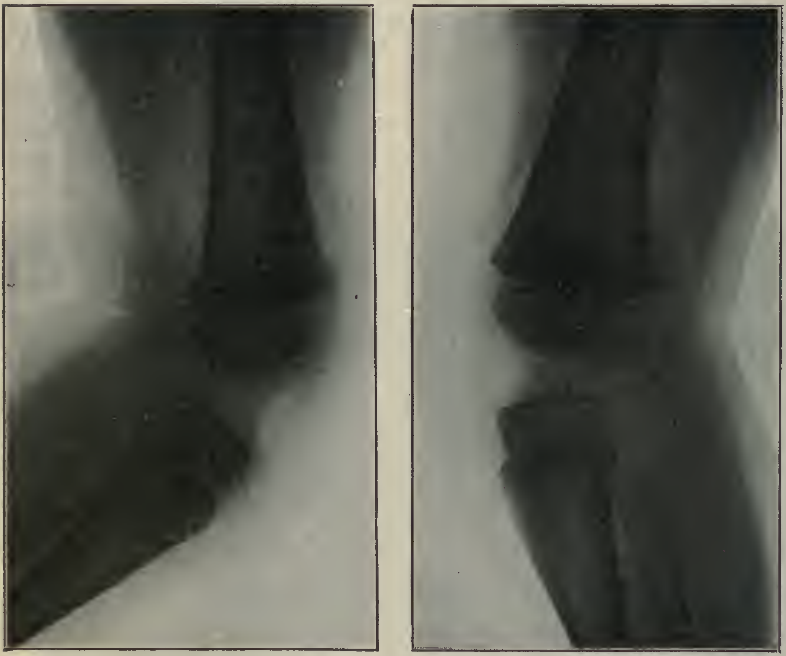
Aside from the peculiar anatomical features presented by this case, it is interesting because of the maternal history which suggests the question of maternal impressions.



A. ANTEROPOSTERIOR VIEW, CASE OF TOTAL ABSENCE OF PATELLÆ.

Mary T. is the seventh of a family of eight children, all of whom are living and in robust health. Her parents were born in the United States of Irish descent, and are both in excellent health.

The family history is negative regarding syphilis, rheumatism and tuberculosis. The mother gives a history of no miscarriages or abortions, and adds that her labors have always been normal. She states that at the fifth month of gestation she sustained a sudden fright because of the entrance of a burglar into her apartments. During the entire period of pregnancy she was wont to take daily outdoor recreation, and at such times she was obliged to pass a man, some fifty years of age, living in the lower part of the house, who had been unable to walk since early childhood, although apparently possessing both lower limbs in normal condition. Beyond this nothing is known regarding the man's disease.



B. LATERAL VIEW, CASE OF TOTAL ABSENCE OF PATELLÆ.

Mary was born at full term after an uneventful non-instrumental labor. She is now a plump robust child, four years of age. Her previous history is negative except for measles, mumps and chicken-pox. She presents no history of a fall or injury of any kind. She is of average intelligence and very active of body.

The Roentgen Ray photograph* marked A (anteroposterior view) shows a total absence of patella of both knee joints and a careful study of the same will also disclose an absence of the centres of ossification of the patellæ. The Roentgen Ray photograph* marked B (lateral view) will demonstrate the same phenomena, and in addition shows the extreme possibility of flexion of the knee joint in this case.

The child is accustomed to maintain her lower limbs in a position of hyperextension in order the more easily to support the centre of gravity of her body. Her gait resembles the action of a first-class lever with the hip joint as a fulcrum, the thigh and leg being carried forward and backward as a single mass and, as it were, immovable at the knee joint.

The child is capable of participating in the usual games of childhood, but in any case where flexion of the knee-joint is called for, such as ascending a pair of stairs, she finds it an utter impossibility to accomplish the feat.

Meningeal Symptoms Occurring During the Course of Gastroenteritis in Children. — When symptoms pointing to a lesion of the meninges occur during gastrointestinal attacks, observes A. Ausset (*L'Union Med. du Canada,* June, 1903), it is of the utmost importance that we should be able to tell whether or not meningitis is really present. In his opinion, simple convulsions, not followed by special meningeal symptoms, are usually, if not always, due to some irritation of the meninges of more or less severity; the child may later be attacked by encephalitis, cerebral sclerosis, hydrocephalus, etc., definite lesions which prove that the convulsion was the sign of some grave change in the nerve centres. Diagnosis of the true state of things is, however, extremely difficult, nor can lumbar puncture be relied upon to give us absolute information. Kernig's symptom is almost always present and gives valuable indications. Ocular troubles are of great diagnostic importance, but they do not occur when there is merely hyperemia, congestion of the meninges. Still a maximum contracture of the pupils is a frequent sign. As regards treatment, lumbar puncture may be of use in allaying pains, in diminishing hydrocephalus when it is present, and in assisting in the diagnosis. It must, however, be done under the strictest antiseptic precautions, and not be resorted to unless clearly indicated, nor repeated too often.—*Medical Record.*

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*Taken by Mr. Eugene W. Caldwell, Director Edw. N. Gibbs Memorial X-Ray Laboratory.

PAPILLOMATA OF THE LARYNX IN AN INFANT.*

BY THEODORE J. ELTERICH, M.D.,

Professor Diseases of Children, Western Pennsylvania Medical College, Pittsburg;
Pediatrician to the Allegheny General Hospital; Physician to the Home for
the Friendless, and Gusky Orphanage; Fellow of the Pittsburg
Academy of Medicine, etc., Allegheny, Pa.

On October 25, 1903, I saw Charles P., *aet.*, two years, an inmate of the Allegheny Home for the Friendless, whose history, obtained from the mother, is as follows:

The child was born October 23, 1901, of healthy parents. At birth he presented nothing abnormal, crying in a loud, clear voice.

When seven months old, he began to have attacks of dyspnea, accompanied with hoarseness. These symptoms were attributed to an ordinary cold. The dyspnea would last eight or ten days, gradually subsiding, but recurring about every six or eight weeks, the paroxysms increasing in intensity. After the first attack, the voice remained impaired; in fact, complete aphonia soon developed which persisted up to the time of his death. There was no history of any infectious diseases. I first saw him during one of his attacks of dyspnea, when he presented the following features:

Posture and objective symptoms were those of a patient suffering from stenosis of the larynx, often seen in advanced cases of laryngeal diphtheria. The expression of the face was very anxious; the face, lips and finger-tips were cyanotic. All the accessory respiratory muscles were brought into play with costal and sternal recessions. On auscultation of the chest, some coarse mucous râles could be heard. The heart sounds were normal. The mucous membrane of the mouth and throat was bluish red in color, but evidences of inflammation were absent. The respiration was stridulous in character and very much accelerated, pulse 140, temperature 99½° F.

These symptoms persisted for several days, afterward gradually subsiding; complete aphonia, however, remained. Several weeks later there was a recurrence, and about the same time a papular eruption made its appearance on various parts of the body, which was probably due to the prolonged administration of bromid, but which, for a short time, led to a suspicion of syphilis. Under antisyphilitic treatment there was marked improvement not only in the respiration, but also in the general condition of the patient. There were no severe attacks for several months. On May 4, 1904, the patient became very ill with a very severe attack of varicella. Dyspnea at once set in, accompanied by an extensive bronchitis. On May 11, the symptoms of stenosis became so severe that operative interference, which had previously been strongly urged, was insisted on. The mother finally consented, and preparations were made for intubation or tracheotomy, but before I could reach the Home, the patient died of asphyxia.

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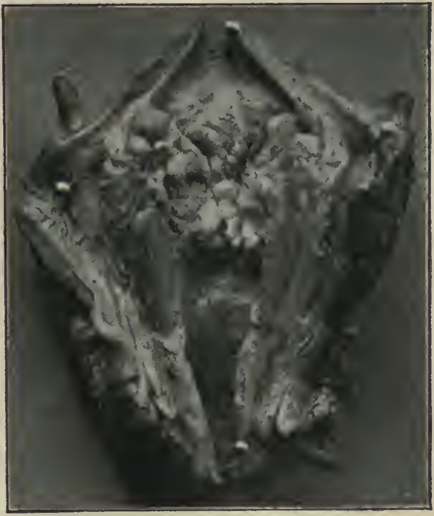
* Read at a meeting of the Fort Pitt Medical Club.

Postmortem Examination.—Owing to the fact that the mother had refused permission to hold an autopsy, the larynx and a portion of the trachea were hastily and secretly removed. The following condition was found: The larynx and trachea are normal in size for an infant two-and-a-half years old. The aperture of the larynx is almost entirely occluded by a mass of papillomatous growth. In fact, the lumen is so small that a probe of ordinary size can scarcely pass. The vocal cords are practically obliterated. Some of the growths are also seen on the epiglottis and the trachea.


PAPILLOMATA OF LARYNX IN INFANT OF TWO YEARS.

All varieties of papillomata are found. Some are large cauliflower excrescences; others small, about the size of a mustard-seed. Some spring from a broad base; others are pedunculated. All are of a light pink color.

In recording this case, there is added another instance of a somewhat rare affection of infancy. Neoplasms of the larynx are comparatively rare, although McKenzie and others are of the opinion that papillomata of the larynx occurs much more frequently than is generally supposed, and intimate that many cases are never diagnosed as such.

The etiology of this affection is not definitely known. It is almost impossible to assign a definite cause for the presence of papillomata in the larynx of any individual patient, as they may have existed a long time before the cause to which they are attributed had begun to act. In addition to the influence of acute inflammatory diseases, sex, hereditary influence, constitutional peculiarity and conditions and surroundings are mentioned as predisposing factors.

The influence of acute diseases, such as measles, scarlet fever, etc., is probably exerted indirectly through the chronic catarrh which is so frequently a sequela of these diseases.

While the influence of sex has not been fully investigated, it is the general opinion that laryngeal growths are more common in males. It is very doubtful whether heredity has any special influence on the production of these growths. Poyet, however, reports the occurrence of papillomata of the larynx in a brother and sister, whose father was stated to have been similarly afflicted. Later, he treated two brothers for the same disease. A curious fact in connection with the first 2 cases, just mentioned, was that both had numerous warts on their hands. The conditions of life and surroundings have the same influence in the causation of laryngeal growths as that of other diseases of the respiratory passages.

Diagnosis.—A history of repeated attacks of dyspnea, accompanied with stridulous respiration and aphonia, occurring independently of a catarrhal, syphilitic, or diphtheritic infection, must be considered very suggestive of a neoplasm of the larynx. The laryngoscope is the best means of making an accurate diagnosis. When it is possible to get a good view of the glottis, the evidence of the laryngoscope is, of course, conclusive. On account of the great difficulty in examining young children with the laryngoscope, it is extremely probable that many cases of growths in the larynx are overlooked. It has been stated that examination with the index finger may give some idea as to position, size, form and consistence of tumors situated above the vocal cords.

Prognosis.—The prognosis is always serious, especially in very young children. This is due to the small size of the larynx, and to the great difficulty attending the diagnosis and treatment. The prognosis is also unfavorable from the fact that a papillomata has a marked tendency to recur and often becomes multiple. In addition, tracheotomy is more dangerous in young children than in adults.

Treatment.—These cases should always be referred to a skilled laryngologist for treatment. Surgical interference seems to be the only hope for relief. As to the propriety of performing intubation or tracheotomy in these cases, I can only speak regarding my own case. Intubation in this instance would have been utterly impossible; the smallest intubation tube could not have passed the constricted aperture of the larynx. Such an attempt would have resulted most disastrously. Tracheotomy, on the other hand, would have given immediate relief, and, perhaps, have saved the life of the patient.

418 Madison Avenue.

Antidiphtheria Serum Tablets.—In this communication from the Paris Pasteur Institute, Martin (*Rev. Mens. des Mal., de l'Enfance*) states that he has established that the curative serums contain a sensibilizing substance when they are able to induce agglutination, which ordinary serums do not have. He also announces that antidiphtheria serum applied locally to the throat in case of diphtheria rapidly reduced the pain in all his experiences. Local applications are too transient for much benefit to be derived in this way and still better results are attained by incorporating dried serum with some vehicle which slowly dissolves in the mouth. Tests of serum tablets thus made and given to adults and older children showed that the pain rapidly subsided under their influence, the membranes turned yellow, swelled, and were soon cast off. Cultures taken from the throats after using these tablets showed that a much smaller number of colonies developed after twenty-four hours than in control cultures, and very few could be discovered after forty-eight hours. His experience demonstrates that the persistence of the diphtheria bacilli in the throat can be diminished by using these tablets, and that they will also serve as a prophylactic measure. He never failed to make the usual subcutaneous injections of the serum in cases of established diphtheria, and regards the tablets in such conditions as merely an adjuvant until further orders.—*Journal of the American Medical Association.*

I. UREMIC ONSET OF TYPHOID FEVER IN A GIRL, THREE YEARS OLD; RELIEF BY LUMBAR PUNCTURE.

II. URTICARIA AS A SEQUEL OF DIPHTHERIA WHEN ANTITOXIN WAS NOT USED.

III. UNUSUAL COURSE OF MEASLES RASH.*

BY ALFRED HAND, JR., M.D.,
Philadelphia.

I. UREMIC ONSET OF TYPHOID FEVER IN A GIRL THREE YEARS OLD; RELIEF BY LUMBAR PUNCTURE.

C. K., three years old, female, white, was admitted to my wards at the Children's Hospital with the history of an illness of four days' duration, the symptoms having been malaise, anorexia, fever, slight cough, vomiting and constipation, the last bowel-movement four days earlier having been very slight; she had steadily grown weaker and thinner and had been very drowsy for the past two days.

Physical examination was negative, except for a slight enlargement of the liver and some small, moist râles at the bases of the lungs; the pulse was weak and intermittent, and the general appearance was that of a very sick child, a condition which we felt was well-described by the term toxemic, and this seemed to be explained by the state of the urine, which contained albumin and an abundance of granular, epithelial and hyalin casts. A blood-count showed a leukocytosis of 12,560 and a Widal test taken at the same time, on the fifth day of the disease, was negative. When the bowels were moved, the stools contained many seat-worms.

Under symptomatic treatment, with rest in bed, there was marked improvement, so that, at the beginning of the third week in the Hospital, she was apparently in a normal condition.

On the twentieth day of the disease the temperature rose from 98.6° F., in the morning, to 103.6° F., in the evening, and was still higher on the following morning (Chart v.), when convulsions followed deep unconsciousness, the scanty urine being found to contain much albumin and many casts. The convulsive movements were general, but were controlled for some time by active treatment, comprising morphin, bromids and hot baths; they were returning in the afternoon, and, as there seemed to be no permanent improvement, lumbar puncture was done at 7:45 P.M., 50 c.c. of normal cerebrospinal fluid being withdrawn. The convulsions ceased and consciousness returned in about an hour. The temperature continued elevated for five days, the lowest register being 102° F., and the highest 104.8° F. At the end of this time there was a rather sudden drop one morning to 99.4° F., but the evening temperature was 100.6° F., and there then followed a febrile stadium, remittent in type and increasing in severity for ten days, when lysis began; the temperature reaching

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* Read before the Philadelphia Pediatric Society, October 11, 1904.

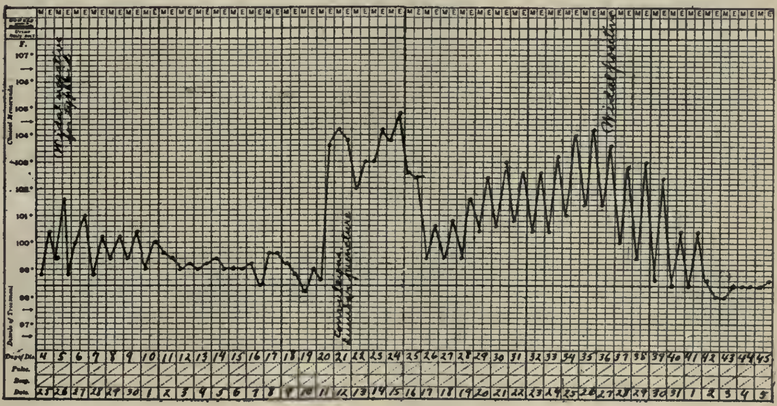

CHART SHOWING AN ATYPICAL FEBRILE COURSE, FOLLOWED BY HIGH FEVER WITH UREMIA, SUBSIDING TO A TYPICAL MILD TYPHOID FEVER.

normal twenty-two days after the convulsions and forty-two days after the original onset. Toward the middle of this last period of fever the clinical impression was that of typhoid fever, and a Widal test made on the thirty-sixth day gave a positive reaction. The subsequent course of the case was uneventful, defervescence being complete a week later and convalescence being uninterrupted.

The onset of typhoid fever with symptoms of acute nephritis occurs sufficiently often to be described in all the text-books as a type of the disease. The relief of uremic symptoms by lumbar puncture, although of comparatively recent date, has been accomplished so often that the procedure is recognized as a useful addition to the treatment of the condition. The only doubtful feature of the case is the nature of the illness for the first ten days, but if, as I now believe, that was an irregular form of infection with the typhoid bacillus, then the convulsions marked the onset of a relapse.

II. URTICARIA AS A SEQUEL OF DIPHTHERIA WHEN ANTITOXIN WAS NOT USED.

There is little of importance to add to the above title except to clear myself of the charge of having treated diphtheria at the present time without antitoxin. When Frank M., seven years old, was brought to my office with a well-marked paralysis, involving the muscles of deglutition, accommodation and locomotion, I felt justified in ascribing it to an attack of tonsilitis, which he was said to have had a month earlier. The physician in attendance in that attack, the mother stated, gave no hypodermic injection, but two weeks after this the boy suffered for some days with a severe attack of urticaria, the itching from which made him restless and sleepless for several nights.

J. J. Walsh (*Philadelphia Medical Journal,* Vol. VIII., No. 15) has reported a similar case with the remark that if the conditions produced by diphtheria were more carefully studied, the diphtheria serum might be freed from many suspicions attached to it. My purpose in reporting this case is not to lay any undue emphasis upon it, but to show the possibility that occasionally an urticaria following diphtheria might have occurred even if the antitoxin had not been used. In this connection I should like to call attention to a little laxness of expression by some writers in speaking of "antitoxin-rashes." The more correct term is serum-rashes, as serum, devoid of antitoxin, may cause the eruptions.

III. UNUSUAL COURSE OF MEASLES RASH.

The unusual course in this case was the initial appearance of the rash on the legs, spreading thence to the trunk, and lastly to the neck, the face having only an erythema.

R. C., a boy of twelve years, was exposed to measles through an attack which developed in his sister shortly before Christmas, so he was kept under observation, and on the first day of the New Year he had fever of 102° F., cough and vomiting. The subsequent daily notes were as follows:

January 2d, temperature, 100.2° F.; cough dry and hacking; January 3d, temperature, 100.4° F.; Koplik's spots present; no exanthem; January 4th, temperature, A.M., 101° F.; P.M., 103.6° F.; a typical measles rash on the thighs, faint on the trunk, none on the face or neck; face is swollen and has a sleepy expression; postcervical glands enlarged; January 5th, temperature, 103.2°-103.8° F.; the rash is most marked on the right thigh, although very pronounced on the left, the papules being very large; on the trunk the papules are small and discrete, except over the shoulders, where they are thicker with crescents; small papules on the back of the neck; face is free; flexor surfaces of arms have pronounced rash; Koplik's spots still present; January 6th, temperature, 101.4°-102.2° F.; coalescing of rash on legs, full development on chest, with diagrammatic crescents; in some places, coalescence, in some, miliaria; face diffusely flushed; tongue coated, but not the strawberry appearance; no vomiting; pulse 118; postcervical glands more enlarged; January 7th, temperature, 104.6° F.; severe diarrhea; rash has a brownish hue; January 8th, temperature, 98°-100° F.; convalescent.

The temperature chart shows a typical course with the initial catarrhal fever, the pre-eruptive remission and the eruptive rise; the subsidence of the fever was interrupted for a day by a sharp attack of diarrhea, which suggested the occurrence of an eruption on the mucous membranes.

Syphilis in the Mother and the Newborn. — Fr. Mracek (*Wien. Klin. Wochenschr.*, No. 18, 1903, p. 519) discusses this subject most exhaustively, and comes to the following conclusions: The earlier the fetus becomes infected the greater the existing danger for the same. In studying the question of the age of the maternal syphilis, whether postconceptional, during conception, shortly before conception, whether it be many years old, inveterate syphilis, probable syphilis, and undemonstrable syphilis, he concludes that in all events there is great danger to the life of the fetus. He found the placenta diseased in 9 of 11 cases in which syphilis of the mother was not demonstrable, a fact which is remarkable in relation to the question of the manner of the communicability from the father. The long-enduring transmissibility of the syphilis of the mother, and the deleterious effect upon the fetus, calls for energetic treatment. It is to be noted that there are cases of syphilitic mothers who have brought healthy children into the world, and who have escaped early abortions.—*American Medicine.*

Address.

THE PRESENT PROBLEM OF PEDIATRICS.*

EXCERPT OF ADDRESS DELIVERED AT ST. LOUIS, BEFORE THE CONGRESS OF ARTS AND SCIENCES, SEPTEMBER 21, 1904.

BY PROFESSOR THEODOR ESCHERICH,
Vienna, Austria.

The development of pediatrics as an independent science extends back to the beginning of the previous century and to the reform of medicine by the great French clinicians. It progressed under the mighty influence of the discoveries in pathological anatomy whose findings were being made to conform with the clinical types of disease. The reaction from this led to a one-sided growth in clinical symptomatology and in the study of disease in which the University of Vienna took a prominent part. The latest tendency is to seek the key to the comprehension of the diseases of childhood by the study especially of the physiological and physio-pathological conditions of the growing organism.

The introduction and growth of modern methods of examination, which date from the middle of the previous century, had marked influence on the development of pediatrics. These methods are percussion and auscultation, thermometry, diagnostic punctures, the different endoscopic methods, chemical examination of the urine and of the stools, especially those of nursing infants, and the investigation of metabolism, carried out recently with especial enthusiasm. The most marked advance, however, has come from bacteriology, as a very great number of the diseases occurring in infancy are due to bacteria and diagnosticated with certainty only by the determination of their presence. For example, infectious diseases indicate that the causes of the diseases occurring in childhood, with the exception of those associated with birth and growth, are the same, except that the diseases need not be so intense as they attack much weaker organizations than in adults.

The reason for the manifold differences in the development and course of disease is based upon the difference in the organization of the growing body from that of one already developed. The following three laws of growth can be expounded:

(1) Growth in cell multiplication leading to the development of the body is a function of vegetative life, especially in the younger generation of primordial cells. The growth steadily

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* Abstract from the *Albany Medical Annals*, October, 1904.

diminishes from the beginning of the development in the primordial cell; at first rapid, then less rapid in intensity.

(2) The curve of the functional activity of the organs proceeds in inverted order and rises still higher when the histological development of the organs is completed. To the same degree the resistance of the organism increases and accordingly the mortality diminishes toward the end of childhood. The unnaturally high mortality of the first year in spite of high vital potentiality is explained by the retarded development and the functional weakness of organs necessary for the continuance and protection of life.

(3) The development of the individual organs does not proceed continuously, but rather at different periods and at times rapidly and in a rotation which depends upon their greater or lesser importance in the foundation of life. Infancy is, therefore, divided into a number of periods of growth which are characterized physiologically by the growth of especial organs. In each of these periods special needs and necessities arise as a result of the backwardness of individual functions.

These conditions, together with the character of the body which varies with the age, make clear that certain diseases exclusively and others with especial frequency are observed at each of these periods, so that there is a morbid physiognomy for each period.

I. INFANCY: INFANTIA.

(1) *Period of the New-born.*—(First week) characterized by passage from intra- to extra-uterine life and the retrogression of the fetal organs. Hyperemia and desquamation of the cuticle.

Pathology.—Malformations, fetal and inherited diseases (lues), tumors, birth injuries (fractures, lacerations, hemorrhages, injuries to skull), abnormalities in the retrogression of the fetal vessels (diseases of the navel), in the vegetative functions, icterus, irritation and lesions of the skin and mucous membranes, thereby favoring bacterial invasion of the body which still lacks its protecting bodies (alexines), local and general sepsis, gonorrheal infection.

(2) *Period of Nursing.*—(First year) characterized by the necessity of exclusive milk diet due to the functional weakness of the digestive tract, marked consumption of food and great increase of body weight (three times the birth weight), rapid development of the brain; all other functions not so prominent.

Pathology.—Changes, as result of failure in nutrition either in the intervals of feeding or quantity of food; relative or absolute insufficiency of digestion for nourishment, especially the artificial; irritation of the intestinal tract by bacterial fermentative products, or through invasion of the intestinal wall, producing chronic intoxications and atrophy.

The rapid growth of the brain is occasionally accompanied by hyperirritability of the nervous system (tetany), eclampsia and hydrocephalus; at the same time sensitiveness of the skin and mucous membrane (respiratory tract) and the tendency to pyogenic diseases of every kind, whereas, the specific infectious diseases occur relatively seldom.

(3) *Period of Milk Teeth.*—(Two to five years) characterized by rapid growth and development of the bony framework, appearance of the milk teeth, the learning of walking and of speech.

Pathology.—Changes in the process of ossification with their results (appearing even in the first year) from rickets, curvature of the thorax and extremities, bronchopneumonia, etc. At the same time other dyscrasiæ also occur, status lymphaticus, scrofula, anemic conditions.

The creeping of the child on dirty floors and the habit of sticking everything in its mouth produce, together with the lack of cleanliness, the socalled filth infections (numerous mouth and throat diseases, contagious affections of the skin and mucous membranes, diphtheria, whooping-cough, helminthiasis, tuberculous invasion of the upper respiratory and digestive tracts and the associated tuberculosis of the lymph nodes, especially of the bronchial nodes. From these latter the hilus phthisis, the form peculiar to this period, takes its origin. Frequent occurrence of local and miliary tuberculosis, defects of intelligence recognized by absence of or delayed speech, severe lesions of the brain, as idiocy or epilepsy appear; especial frequency of acute poliomyelitis.

II. BOYHOOD. PUERITIA (Sixth year to puberty) characterized by the marked development and exercise of the muscular system, increase of all functional life with slowly increasing growth of the body, passage of the child from family to social life (school), beginning differentiation of the sexes.

Pathology.—The entrance into school-life brings with it injurious influences, as scoliosis, myopia, nervous disorders of different kinds and the numerous contact infections, of which the most important are the acute exanthemata with their complications (nephritis, myocarditis).

The irrepressible desire for movement is the cause of traumata, possibly, also, of the now frequently occurring appendicitis. Tuberculosis, and especially that of the nodes, is less frequent and approaches the character found in adults. On the other hand, there appears a new and dangerous infectious disease—acute articular rheumatism with endocarditis and chorea.

III. Puberty. In boys from sixteen years. In girls (Germanic stem) from thirteen years. In the latter the occurrence of menstruation, awakening of sexual feeling and development of the secondary sexual characteristics.

Pathology.—At puberty there occur frequently in girls characteristic pathologic conditions, chlorosis, hysteria, psychoses, cardiac diseases. Otherwise the morbid conditions pass into those of adults.

The *therapy* must also be suited to these periods of development which require marked and important differences for each in the practical application of drugs as well as physical methods of treatment. The striking difference in comparison with the treatment of adults lies in the great importance and application of individual prophylaxis which in young children depends upon the nutrition and should be overseen by the physician himself. Especially is this true for the first period of growth when the protection of the newborn from external injurious influences, the avoidance of infections and method of nourishment are especially difficult questions. In no other way can the great mortality of infancy at this period be lessened. The further theoretical and practical application of this special care, the limitation of disease, the greatest possible development of the resistive power, and the child's physical development are the ideals which we must now look forward to in pediatrics.

Acute Necrosis of the Mastoid and Temporal Bone Following Scarlet Fever. — G. Heermann (*Münch. Med. Wochenschr.,* June 2, 1903) reports 3 cases. The clinical history differs from ordinary mastoid disease in that the initial subjective symptoms are slight and liable to be passed over with but little attention. Herein lies the danger of the condition, for in due time the situation becomes serious, requiring extensive and frequently futile operation. The only safety lies in an early and complete removal of the necrotic bone. The bacteriological status of the necrosis is probably diversified, but in the cases here reported streptococci and staphylococci were found in all.—*Medical Record.*

ARCHIVES OF PEDIATRICS.

NOVEMBER, 1904.

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OVERPRESSURE IN SCHOOL.

An ever-recurring and remarkable phenomenon of the medical year is the abundance of cases of chorea seen in the late winter and spring, together with the scarcity of such cases in the summer and fall. During October or November it is often difficult, even in a large ambulatory service, to collect sufficient cases for a clinical lecture on the various phases of chorea. As the seasons proceed the cases increase slowly in number until about March or April, when there is a sudden rise in the number of those affected. Pale, thin, ambitious children, the majority of them girls, then throng the nervous and pediatric clinics in all stages of the disease.

Undoubtedly several factors enter into the production of this great number of cases in the spring. At this season there is an erethism or spring irritability common to all animals, so that the nervous system is then more susceptible to strains.

Again, many of the cases are manifestations or sequels of a rheumatism acquired during the cold months. The anemia of winter confinement indoors and lack of sunlight is another predisposing factor.

But probably the most important exciting cause, at least in those cases that are not clearly rheumatic, is excessive stimulation of the cortical cells of the brain. This results in the gradual supervention of undernutrition and consequently in overexcitability of these cells. The nature of the stimulation is different in various instances. It may be the social excitement of children's parties, long waking hours, a bad fright, great grief, strenuous games, too many or too long school periods, home study at night, or the strain and anxiety of class recitations; or, it may be improper food or indigestion; at any rate the result is much the same. The child's nervous system becomes debilitated, loses its power of inhibition, and manifests the overactivity of weakness. St. Vitus' dance is cited merely as one of the extreme types of this nervous exhaustion.

The condition that obtains in a great many children every spring is chronic fatigue or malnutrition of the central nervous system. The nerve cells when fatigued shrink in size, as shown by Hodge, their nuclei and nucleoli become shriveled and the lenticular granules of the cell protoplasm, probably nutrient, disappear. After a sufficient period of repose all of these elements of the nerve cells resume their normal condition; the nucleus and the cell become again plump and the nutrient granules reappear in the cytoplasm. For thorough recuperation a varying period of time, inactivity and proper nutrition are necessary. An overworked anemic child will need a longer interval of rest in order to recuperate. A small amount of mental labor may produce great fatigue in a child whose brain cells are weak, under-developed or poorly nourished.

Interesting experiments have been made by Griesbach, in Alsace, with the esthesiometer to show the effects of school work in producing fatigue. The instrument is simply a pair of calipers whose two points can be pressed upon the skin at varying distances apart, the length of the intervals being noted on a scale. It was found that as mental fatigue develops the child's ability to distinguish the two points as distinct diminishes, so that the distance between them has to be increased. The children were tested at various times during school term, on holidays and during vacation. On holidays the variations in the measurements were inconsiderable, while on school days the measurements doubled and some children showed four times the minimal distance. During the midday recess recuperation was considerable but not complete. Even in the morning before school a large number of the children failed to show as great sensibility as on holidays; probably some of these were night workers or were overworked in school the day before. The greatest reduction in sensibility was after mathematics, the least after manual training; thus close mental work is shown to cause the greatest fatigue, while manual training produces the least.

With little children and with older ones that are making rapid bone growth concentration is possible for only a short time without producing fatigue, and if this fatigue is prolonged it becomes cumulative, and complete recuperation is impossible while attending school. Careful attention to the number and character of the different subjects, the length of the lessons and the time of study is necessary. Change of study or the alternation of physical exercise, games or manual training with mental effort is desirable; but it must be remembered that change of work, or change from work to play is not rest, although the result may be added interest in the new occupation. Change of employment is not recreation; for all effort fatigues.

The daily variation of mental power is such that the curve of mental energy beginning at a high level in the morning at nine o'clock rises moderately until ten o'clock, falls at first slowly until eleven o'clock and then very rapidly until the middle of the noon recess; by one-thirty the curve has risen to the eleven o'clock level, but it soon falls rapidly and before three o'clock is at the twelve o'clock level. In adults there is another rise in the evening between nine-thirty and ten o'clock.

Manifestly the difficult lessons should be taken up early in the morning, and since the real intellectual work is learning the lesson, this study should be done in school under the guidance of the teacher. To learn concentration is more valuable than to learn lessons. There should be no lessons to be learned at home before the twelfth year. For little children only one or two hours of school, and those in the morning when the faculties are most alert, should be allowed. The length of the lessons and study periods should be not more than fifteen minutes in the first two years of school life; twenty minutes the next two years; twenty-five minutes the fourth and fifth years, and forty to forty-five minutes in the high school.

Competitive examinations are important contributing causes to collapse from school work. This kind of examination should be abolished and the pupils promoted so far as possible on their daily work; school prizes ought to be abolished. Backward or deficient children and those that are delicate and nervous should have special attention in small classes where competition and emulation are less keen.

Children that need especially to be watched during the school year are those of alcoholic, tuberculous or neurotic family history, those that are anemic, those that are growing rapidly, especially girls at the period of prepubertal acceleration in growth, from eleven to thirteen years, and those that have recently suffered from whooping-cough, measles and diphtheria. Only by the exercise of caution in their school work can such children be prevented from suffering the ill effects of overpressure. Persistent headaches, not due to eye defects, disturbed sleep, morning languor and loss of appetite, are warning symptoms; if they persist after modification of the school *régime* the child should be withdrawn from school for three or four weeks, or until all signs of nervous exhaustion have disappeared. Disregard of these early symptoms risks the more serious results of overpressure, such as chorea, neurasthenia, hypochondriasis, hysteria, and even epilepsy and insanity in those who have a neurotic heredity.

LINNÆUS EDFORD LA FÉTRA.

THE PHILADELPHIA PEDIATRIC SOCIETY.

The proceedings of this important Society will hereafter be published exclusively in ARCHIVES OF PEDIATRICS. The first instalment appears in this issue and the sessions of the Society will be recorded from month to month.

Excision of the Cecum in a Child.—At a meeting of the Chicago Surgical Society, February 2, 1903, Dr. Jacob Frank presented a child nineteen months old. He said that twelve months ago he was called at eleven o'clock at night to see the child, and found it in a critical condition. The history given by the mother was that the child had always been a "colicky" baby. The child had been playing on the floor, when suddenly it was seized with a severe pain, vomited, and passed blood, after which it became very ill. He made a diagnosis of intussusception; the mother took the child to the hospital, and at two o'clock in the morning he opened the abdomen; in examining the coils of intestine he did not find what he thought was a recent intussusception, but in making a further examination he came upon the appendix, which seemed as though it were binding the cecum down. He removed the appendix, and in following the cecum he found it was a hard mass. He therefore resected the entire cecum, making practically two operations. He used one of his absorbable bone couplers in making the intestinal anastomosis, and removed the stitches at the end of seven days. In ten days the child left the hospital. The child was now in perfect health. The specimen was exhibited.—*Annals of Surgery.*

Bibliography.

The Suppression of Tuberculosis, together with Observations Concerning Phthisiogenesis in Man and Animals, and Suggestions Concerning the Hygiene of Cow-stables and the Production of Milk for Infant Feeding, with Special Reference to Tuberculosis. By **Prof. E. von Behring.** Authorized Translation by **Charles Bolduran, M.D.** Pp. 85. New York: John Wiley & Sons. London: Chapman & Hall. Limited, 1904. Price, $1.00.

This small volume is a translation from a lecture delivered in Cassel, to which has been added an explanatory appendix from two articles which appeared in the current literature of the early part of 1904. The translator of von Behring's opinions states that not only is it of great importance that the origin of tuberculosis should be understood by physicians, but by many outside the profession, such as dairy—and cattlemen, sanitary engineers, officers of health, etc.

After detailing the frequency of tuberculosis in cows and the necessity for immunization of cattle, which he believes in time will eradicate bovine tuberculosis, the author expresses the hope that he may in the future be able to produce in cows an immunization which will enable them to produce a milk which will possess protective immunity. He hopes that he will in time present experimental evidence in support of this anticipated result. Whether such milk can be used to combat human tuberculosis, and whether it can be transported long distances without losing this property will be the subjects of careful experimentation.

Of the greatest interest is the author's view regarding bovine and human tuberculosis. To quote: "He [Koch] merely maintained that the virus of human consumption is not identical with the virus of bovine *perlsucht,* and that, likewise, bovine tuberculosis is not identical with human tuberculosis" . . . "If we keep in mind all the functional differences which have experimentally been shown to exist between tubercle bacilli, which have long lived in a human body and those which have long lived in a bovine body, we shall surely not go wrong when we assume that with a little patience and expert knowledge we shall be able to make these two varieties absolutely similar again, even in respect to their virulence."

The susceptibility of the young infant to tuberculosis from milk is shown in the author's experiments to be due to the absence of the protective wall of epithelium in the mucous membrane of the intestine.

Pasteurization at the dairies is advised, as sterilization at the homes of infants does not destroy all toxins. The infant's alimentary tract is infected by these agents whether the bacteria are living or not.

The chapter on phthisiogenesis is of particular interest and the Bonn rules for the hygiene of cow stables, and the production of milk for infant feeding are most timely, appearing as they do when all of the members of the medical profession are agreed as to the necessity of combating tuberculosis in every possible way.

The statement that formalin may be added to milk without any injurious effect on the person using the milk is an open question.

Professor von Behring relieves himself of the charge of commercialism by recommending the purchase of his serum through a firm whose name is given.

Progressive Medicine, Vol. III., September, 1904. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by **Hobart Amory Hare, M.D.**, assisted by **H. R. M. Landis, M.D.** Pp. 284, illustrated. Philadelphia and New York: Lea Brothers & Co., Publishers. Price, per annum, cloth, $9.00; paper, $6.00.

The campaign against tuberculosis is well established. The various methods of conducting such a campaign are abstracted by Dr. Ewert in the September issue of *Progressive Medicine.* He states that the cry for "isolation" is grating upon the nerves of the public. Fraenkel is quoted in the opinion that the spread of tuberculosis in the open air is practically unknown.

Poynton's valuable lectures on rheumatic endocarditis are mentioned in connection with the subject of diseases of the heart as showing the injury, frequently overlooked, to the heart muscle as well as to the endocardium, caused by rheumatism.

Gottheil gives an extensive review of dermatology and syphilis in his usual clear style.

Society Reports.

THE NEW YORK ACADEMY OF MEDICINE.—SECTION ON PEDIATRICS.

Stated Meeting, Thursday, October 13, 1904

DAVID BOVAIRD, JR., M.D., CHAIRMAN.

A CASE OF SCLEREMA NEONATORUM.

DR. SARA WELT-KAKELS presented the patient, a male, seven and one-half weeks old, who had been brought to the Mount Sinai Dispensary on September 12th with the following history: Both parents were living; the mother was healthy; the father had suffered for the past fourteen years from some stomach trouble, but was able to follow his occupation as painter. The mother had had seven children, and one miscarriage, five years ago. Three of the children died of some lung affection, all in the first ten weeks of life; three were healthy. The patient was born at full term. The mother did not feel well during the last three months of her pregnancy; her feet were swollen and she could not move about. Her confinement was instrumental and lasted thirty-six hours. The baby was asphyxiated and it was three-quarters of an hour before it started to cry. A tumor on the side of the child's neck was noticed. The child was restless, and cried whenever it was touched. The bowels were rather constipated and the child vomited frequently. It was breast-fed. Two days before the child was brought to the dispensary the mother noticed a hardening of the skin on the neck and upper arm. Examination revealed an induration of the skin along the entire back, from the neck to the coccyx, over the cheek bones, on the shoulders, on the sides of the chest and the anterior aspect of the right and left femur. The skin in these regions was of a reddish-brown, livid color, band-like, and could not be raised in a fold; there was no pitting on pressure. The joints were movable. The organs of the chest and abdomen were normal. A tumor was situated on the right side of the neck; this was easily movable and rather tense to the touch; it caused no pain on pressure. It was probably of embryonic origin, the result of cystic dilatation of a branchial fissure obliterated at both ends. Dr. Welt-Kakels said that sclerema or scleredema of the new-born occurred most frequently among children with feeble heart action, in the asphyxiated and premature. The disease was more commonly met with in foundling asylums, and in bad hygienic surroundings. In America it was extremely rare. An interesting feature of the case under discussion was that when first seen, the rectal temperature was 101° F. In most of the cases on record, a subnormal temperature was reported. The child was apparently improving under treatment, the main feature of which was hot baths.

DR. WILLIAM P. NORTHRUP said he had seen but one case of scleredema neonatorum, and that was many years ago at the New York Foundling Hospital. That case formed almost a composite picture of the various descriptions of this condition found in the text-books. The subnormal temperature was a marked feature of the case; in fact, it was so low that no thermometer could be found to register it. The induration of the skin was first noticed on the cheeks; then on the neck and shoulders, from which it spread all over the body, so that the infant became stiff and cold. Artificial heat was applied in every possible way, but it made no impression on the bodily temperature. After death, sections of the tissues were removed from different parts of the body, and hardened and stained in various ways and examined microscopically, but the results were absolutely negative.

THE INFLUENCE OF THE FIRST AND SECOND DENTITION PERIODS IN THE ETIOLOGY OF EPILEPSY.

DR. WILLIAM P. SPRATLING, Medical Superintendent of the Craig Colony for Epileptics at Sonyea, N. Y., presented this paper. The writer said it was his conviction that we were never justified in looking upon the convulsions of infancy and early life as harmless manifestations. Numberless convulsions appeared at this period that began as benign, and sooner or later ended as such, but many others, even thousands, began as benign to sooner or later end in established epilepsy. The fact that many infantile convulsions did not pass into epilepsy granted no license for regarding such convulsions as innocent of future harm. The speaker said he was led to make this statement after ten years' experience at the Craig Colony for Epileptics, during which time he had studied the etiology of the disease in nearly 2,000 cases. Infantile convulsions that appeared in connection with the first and second dentition often disappeared entirely for years, only to recur at some future time when the child was passing through a period of physiologic stress, particularly like that which so commonly characterized the epoch of puberty. The lesson we often failed to learn was the necessity for constantly recognizing in such children the presence of the convulsive tendency. To keep the child free from convulsions was to diminish the chances of epilepsy in later life.

In connection with his paper, Dr. Spratling showed a number of statistical charts, giving the various ages at which epilepsy developed in the cases under his observation at the Craig Colony.

Chart I. gave the age for each year at the onset of epilepsy in 1,215 cases from the first to the twentieth years, inclusive. These 1,215 cases represented 80 per cent. of all patients admitted to the Craig Colony up to the time these figures were made. One hundred and seventy-five of these cases, equal to more than 14 per cent. of the entire number, developed the disease during the first year of life. After passing the first year, there was a very decided and continuous decline up to, and through, the fifth year, there being only 33 in that year, or about one-fifth as many as during the first year. After leaving the fifth year, we entered upon the period of the second dentition, and there was a very decided rise in the number of cases through the sixth, seventh and eighth years, 45, 69 and 67 cases, respectively, the number dropping to 55 during the ninth year.

Chart II. showed that epilepsy was present in 80 cases during the first month of life; the second month showed a decline to 5 cases and in the third month only 3 cases occurred. A notable increase took place during the fourth month, followed by a second decline through the fifth and sixth months, after which a very positive rise was noted during the seventh month, 20 cases occurring during that month, equal to 25 per cent. of the entire number. The sole fact of the importance about the very notable rise during the seventh month was that it marked the beginning of the influence of the first dentition period.

Chart III. was made from a grand total of 3,523 cases, in all of whom epilepsy developed before the twentieth year. Of these, 376 developed during the first year of life; these cases he ascribed to congenital causes, heredity, to birth accidents and the first dentition. Passing the first year, a continuous decrease was noted through the second, third, fourth, fifth and sixth years, when only 127 cases out of 3,523 occurred. The seventh year showed an increase to 168, this increase continuing through the eighth year, and reaching 174. After this a fluctuating rate was noted until the twelfth year, when the stress of puberty began to be felt. The four years that covered the developmental period showed a vast increase in the number of cases, a grand total of 877 cases out of 3,523 occurring during those four years. Passing the epoch of puberty, the decline was sharp and continuous, so that by the time the twentieth year was reached, the period had ended during which more than eight-tenths of all cases of epilepsy developed.

Dr. A. Jacobi, in discussing the paper, said that convulsions were very frequent in early infancy, and should always be considered as serious occurrences. Dr. Spratling had emphasized the statement that the convulsions in infancy that led to epilepsy were the "teething" convulsions, instead of referring to them, as Dr. Jacobi would have preferred, as convulsions occurring during the teething period, or convulsions that occurred from some cause or other while the child was teething. As a matter of fact, the process of teething began very early in fetal life, and the teeth were particularly fully developed in the gums when the child was born. The actual eruption of the teeth generally occurred about the seventh or eighth month of life; sometimes earlier, sometimes as late as the twelfth or sixteenth or seventeenth month. This retarded protrusion of the teeth was not the fault of the teeth themselves, but was due to the general condition of the child. Such children were frequently rachitic, which meant an abnormal condition of the meninges of the brain, and convulsions simply on the basis of rachitis. In such children the convulsions were not the result of the teething, but of the peculiar condition of the child. Convulsions would not be looked for in a normal child during the dentition period. It was peculiar that so many convulsions occurred during the first month of life, because the reflex activity of the new-born was almost *nil*. The convulsions at that early age were not of reflex, but of cerebral origin, and in many instances were the result of hemorrhage. The blood-vessels of the new-born were very friable, and hemorrhages were not uncommon. Another cause was sepsis, sometimes of a very mild type. Premature ossification of the sutures of the bones of the skull might also give rise to epilepsy and paralysis. Dr. Spratling, in the history of his cases, had emphasized teething in the causation of the epilepsy, but had said nothing about other important factors, such as improper feeding, etc. Very recently, Dr. Jacobi said, he saw a child in convulsions. The child was teething, it was true, but it had also been fed on sauerkraut and frankfurters during the day. A single convulsion, from whatever cause, might produce hemiplegia and epilepsy. In most of the cases reported by Dr. Spratling the fathers were drunkards; in some, both parents were drunkards, and probably there were several generations of drunkards. Every case of epilepsy should be judged by its own history. Dentition cannot be regarded as a general or even a frequent cause. The normal child will not suffer during dentition, except, perhaps, from a slight salivation, or a diarrhea, in consequence of swallowing so much saliva. In most cases, epilepsy dating from childhood resulted from local changes in the brain.

DR. CHARLES G. KERLEY said he agreed entirely with the remarks made by Dr. Jacobi, and he called attention to the fact that according to the chart shown by Dr. Spratling, convulsions during the second year were of much less frequent occurrence than during the first year, in spite of the fact that teething was much more difficult during the second than during the first year. It was during the second year that the canines and molars were cut.

DR. FLOYD M. CRANDALL said that two questions were raised by Dr. Spratling's paper:—First, the influence of dentition in producing convulsions, and second, as to whether these convulsions that came on early in life developed into true epilepsy. The speaker said that while it seemed to him that teething exerted some influence on the child's condition, he had never been able to convince himself that dentition was the cause of convulsions in a healthy child. He had seen cases, however, where children with rickets, bad digestion, bad feeding, added, perhaps, to bad heredity, had developed convulsions during the dentition period. In such cases perhaps the dentition proved to be the straw that broke the camel's back. The convulsions of infancy were always to be looked upon as grave misfortunes to the child; in no instance should they be regarded as benign, and he had long made it his practice to carefully look after these children, treating the rachitic condition, if there be one, regulating the diet, and guarding against every possible source of further convulsions, so that true epilepsy did not develop.

Dr. Spratling, in closing the discussion, said he had not tried to prove the assertion that dentition had a marked influence upon the development of epilepsy, but had simply brought the facts and figures before the members of the Section. In many of the cases included in his list, there were doubtless other factors besides dentition in the production of the epilepsy. The speaker said he was aware of the fact that teething began during embryonic life, but the trouble did not occur while the tooth was in the gums, but when it began to cut through the gums; that was the critical period. His list did not include healthy, normal children, but diseased children; those whose constitutions were run down or who had a bad heredity. That was the class of children in whom convulsions developed and who ultimately might suffer from epilepsy.

DISCUSSION OF THE SEQUELAE OF CEREBROSPINAL MENINGITIS.

Dr. Henry D. Chapin said that of the 18 or 20 cases of cerebrospinal meningitis that he had observed during the present epidemic, a certain proportion of them had developed a neuroretinitis. In presenting a series of these cases before the New York County Medical Society last spring he had mentioned this fact, and in the discussion that followed one of the ophthalmologists present said that this was a very unusual feature of this disease. Since then, Dr. Chapin said, he had had special attention paid to the examination of the eyes in these cases, and he had at present under his observation a baby of four months, in which the cerebrospinal meningitis was accompanied by a marked neuroretinitis on the right side, and a slight one on the left. Dr. A. E. Davis, who had made the examination of the eyes, seemed to think that the neuroretinitis was a peculiar feature of the present epidemic.

Dr. L. Emmett Holt said his experience showed that cases occurring in children under three years of age were almost invariably fatal. Two remarkable cases of recovery, however, fell under his observation. One of these was a boy of four years, who was taken suddenly ill; he was unconscious, blind and deaf, and for ten weeks had a continuous temperature. At the end of that time consciousness slowly returned; then his improvement became more rapid, and he was now entirely well, with the exception of a certain degree of irritability. In connection with the treatment of cerebrospinal meningitis, Dr. Holt said he was impressed with the absolute futility of drug treatment. In the case he had just mentioned, potassium iodid had been given until the patient's stomach became disturbed. Inunctions of mercury were also tried, and for the pain, morphin was given hypodermatically. The feature of the treatment that apparently saved his life was the careful, constant attention to his nutrition. The pulse ranged between 130 and 150 until the temperature became normal; then it dropped suddenly, ranging for several days from 48 to 60. In the second case there was a temperature for eighty-four days, and during the greater part of that time the patient was unconscious. The case gradually went on to complete recovery. In this instance, as in the other, life was also apparently saved by careful attention to diet and nutrition. Both patients became extremely emaciated, and probably would have died of exhaustion, as most of these cases did, had not the nutrition been so carefully looked after. In another typical case the patient had developed a secondary hydrocephalus, the child's head being enlarged two and one-half to three inches beyond what it should be for its age. The symptoms pointed to a persistent basilar exudate. As regarded the eruption, Dr. Holt said he saw it in a number of cases early in the course of the disease. In one instance it was so intense that the diagnosis of measles was made.

Dr. Jacobi said he had seen about 18 cases of cerebrospinal meningitis during the present epidemic. His death rate was between 30 and 40 per cent., which was less than he had expected. The eruption he observed in very few instances. Deafness seemed to be a more prominent symptom than in previous epidemics, or in the stray cases that were occasionally observed. Out of 8 or 9 cases that he had in his ward, 3 became hopelessly deaf. Why the eyes, and perhaps the ears, did not become more frequently affected, the speaker said he was not able to say, because in practically every case the nasal mucus showed an almost pure culture of the meningococcus, and there was plenty of opportunity for dissemination of the germs. The nasal involvement was very marked during the present epidemic.

Dr. L. E. La Fétra said that in discussing the mortality of cerebrospinal meningitis, it was important to keep in mind the age of the patients; because the younger the patients the higher the death rate is. All of the cases he reported occurred in patients under three years of age. He had seen 20 cases during the past summer, 18 at the Babies' Hospital and 2 at the Vanderbilt Clinic. The diagnosis had been confirmed by lumbar puncture in every case but one. Of the nineteen punctures made, there was a positive growth in the fluid drawn from 14. In 4 of the others there was no growth, but pus cells and an excess of fluid under pressure. One case was confirmed at necropsy. Lumbar puncture was confirmatory for diagnosis in every case where it was employed. Dr. Marple had found a neuroretinitis in 20 per cent. of the cases examined. Of the 20 cases, 11 were males and 9 females; the ages of the patients ranging from three months to three years. Eight cases were under one year old; 7 cases were between one and two years; 4 cases between two and three years. The patients had been ill for periods ranging from two days to three months before admission to the hospital; none of the cases developed in the hospital. In two instances there was another child in the family ill with the same disease. Six began with cough. In 10 there was a history of vomiting, which was usually accompanied by convulsions. Eight had convulsions and fever. The temperature ranged between 102° F. and 106° F., according to the stage of the illness, and would at times remain normal for long periods, only to rise again. There was rigidity of the neck in 16 cases; in 3 cases there was no rigidity at any time. In 2 cases the fontanel was depressed; in 2 it never bulged. Tâche cérébrale was present in 16 cases; not recorded in 4 cases. The pulse was irregular at some time in 13; regular in 7. It was irregular and slow in only 1 case, a child of three years. Even in those cases that had irregular pulse the rhythm and force would be found surprisingly regular the greater part of the time. The respirations were noted as Cheyne-Stokes in 1 case; as regular in 13 and irregular in 6. There was apathy and irritability in all cases. Kernig's sign was present at some time in 16 cases; it was absent throughout in 4 cases, of which 3 were fatal and 1 recovered. Babinski's sign was noted in 1 case. There was no record of Macewen's sign. Petechiæ were observed in 3 cases, and bilateral herpes in 1 case, an infant of seven months. Opisthotonus was present in 12 cases; absent in 8. Tremor was present in 4 cases. Wasting or marasmus was present in all cases, and was one of the most distressing features of the disease. The length of the illness varied from four days to four months. The earliest case began, according to the history, in January; 12 cases began in April and May. Death occurred in 16 cases; 2 were apparently completely cured; 1 case developed a chronic hydrocephalus and 1 was lost sight of. Of the 2 that recovered, 1 had the disease for three months and 1 for 43 days.

Dr. Northrup showed the temperature chart of a case of cerebrospinal meningitis in which death occurred after 135 days' illness. The patient was a girl, fourteen years old, of a particularly robust type, who was very fond of horse-back riding. Her illness came on suddenly. The eruption, herpes on the lips and the emaciation were prominent features of the case. Death occurred of exhaustion, in spite of every effort to increase the patient's ability to assimilate food. Dr. Northrup said that during the recent epidemic he had seen 10 cases of the disease in private practice, and of these, 8 died. Of the 2 that recovered, 1 went 107 days and the other 42 days. One was two years old; the other four. They had all the characteristic symptoms of the disease. Among the cases he saw at the hospital, 1 recovered, but was deaf, blind and idiotic. The speaker said that the most marked peculiarity he had observed in the recent epidemic was the great variability and infinite variety of the symptoms.

Dr. William L. Stowell said that in 1 of the 8 cases he had observed the patient recovered with an endocarditis. This began when the child had been ill about two weeks, and the endocarditis lasted about eleven weeks. The case went on to complete recovery. In another case, a child of twenty-two months, a choroiditis developed; this case died in convulsions after two and one-half months' illness. One case recovered without any unusual manifestations or sequelæ. All the other cases died. Dr. Stowell said that in a case which he saw during an epidemic, several years ago, there was apparent total blindness, but since then sight was gradually restored and was now practically normal, showing that atrophy of the optic nerve was evidently not complete. The mental condition of that child, however, was much impaired.

Dr. William M. Leszynsky said that during the recent epidemic of cerebrospinal meningitis he saw upwards of 30 cases, and the remarkable feature of the cases, to which one of the speakers had already called attention, was their variability. One patient, a boy of ten years, in whom the diagnosis was made only through lumbar puncture, had no rigidity, no loss or exaggeration of reflexes, and simply remained in a semiconscious condition. He answered questions from time to time; his pulse was slow, his temperature subnormal, and death occurred in about four days. No autopsy was obtained. Another patient was a girl, who developed a lesion of the cornea, which probably was infected by herself, and which terminated in perforation and the loss of the eye. In this case the emaciation was so extreme that the skin ulcerated over the protruding pelvic bones. This patient also died. Dr. Leszynsky said he had made ophthalmoscopic examinations in all his cases as a matter of routine, and in only a few instances was an optic neuritis demonstrable. In several instances where a bad prognosis was given the patients made a complete recovery, without any sequelæ. He had not seen any cases of the fulminating type.

Dr. Northrup said he had seen 1 case of the fulminating variety in which death occurred within twenty hours after the onset of the disease. During that time the patient was a raving maniac. In another case, death occurred within fourteen hours.

Dr. F. S. Fielder spoke of a case, now at Bellevue Hospital, which appeared to correspond to that referred to by Dr. Holt, in which there was a secondary hydrocephalus, with chronic basilar exudate. The child was taken ill about the 1st of May. The case was first supposed to be one of pneumonia, and from that drifted into cerebrospinal meningitis. On the 1st of June it was admitted to the Post Graduate Hospital. The child was unconscious, and ran a very irregular, fluctuating temperature, ranging from 105° F. and 106° F. to normal. There was also diarrhea and gastric irritability. Subsequently, Klebs-Löffler bacilli were found in the nose and throat, and the patient was transferred to the Willard Parker Hospital. It remained there about five weeks in an unconscious condition, with marked retraction of the head and nystagmus, chiefly upward, so that it was practically impossible to make an ophthalmoscopic examination. There was also contraction of the muscles of the arms, and the hands and feet were in a flexed position. The patient was subsequently transferred to Bellevue, and now had some semilucid intervals. At the Post Graduate Hospital, lumbar puncture was done several times. Four times the fluid withdrawn was clear, once it was turbid and once bloody, but in no instance was the meningococcus positively identified. About the middle of September, at Bellevue, another lumbar puncture was made and the meningococcus found in the serum. The child was still in the hospital and was believed to have chronic basilar meningitis.

Dr. Henry Heiman referred to a few cases of cerebrospinal meningitis that occurred during the past summer in the wards of Dr. Koplik. One case, after being under observation for over three months, developed symptoms of hydrocephalus with marked opisthotonus. This patient was treated by repeated lumbar puncture, gradually increasing the quantity of fluid withdrawn until, finally, 175 c. c. were removed. Most of the cases showed great fluctuations in the temperature. In 1 case seen in private practice, a boy of sixteen, the onset was of the fulminating character. Lumbar puncture was done, and a purulent fluid withdrawn. The meningococcus was found in this specimen. The boy made a complete recovery and had since returned to his home in Cuba.

Bilateral Blindness Following Measles. — Measles is apt to be complicated by inflammation of the cornea and conjunctiva, but apart from that the disease may bring about damage to vision in other and less obvious ways. A form of retrobulbar neuritis, due apparently to the toxins present in the system, may be to blame; so may a nephritis which has complicated the former. In very rare cases, blindness appears to have been due to a cortical lesion. Rollet, of Blois (*Clin. Ophthal.*, July, 1903), records the case of a girl, *aet.* 13, who acquired measles during an epidemic. She had the disease mildly, it ran its usual course, and she was out of doors again having had no eye symptoms whatever. But one day she felt extremely drowsy while sitting under a tree, dropped off to sleep for a very brief period, and awoke to find herself completely blind. In the fundus the only pathological change detected was that the discs were of a strange orange-yellow hue, dull and waxy-looking. This waxy appearance was present nearly all over the fundus; only about the macula and disc itself the color was more nearly gray; the vessels were extremely small. The aspect suggested that the appearances were not all recent, they looked as though they were part of a chronic process, but no previous symptoms were admitted by the patient. The urine contained a trace of albumin, but she had no other signs suggestive of uremia. Some months later, the vision remaining the same, there were further changes in the fundus suggestive of retinitis pigmentosa. —*Edinburgh Medical Journal.*

THE PHILADELPHIA PEDIATRIC SOCIETY.

Stated Meeting, Tuesday, October 11, 1904.

DR. J. H. JOPSON, PRESIDENT.

DR. GEORGE B. WOOD showed a patient with

STENOSIS OF THE LARYNX FOLLOWING TYPHOID FEVER.

DR. JOPSON said that he had not seen the child before she was operated upon. In August, he saw the patient with Dr. Wood, and introduced, with considerable difficulty, an intubation tube several sizes smaller than the larynx of a child of that age should accommodate. The patient afterward breathed through the tube, showing that there was no obstruction below it. It was thought best not to leave the tube in, but to attempt gradual dilatation and afterward try to get rid of the tracheotomy tube. A week later, it was found that not even the smallest sized intubation tube could be introduced into the larynx without administering an anesthetic, so its introduction was deferred until an anesthetic could be given. He said that if there should be a large quantity of granulation tissue and an active process of ulceration in the larynx, intubation would not be indicated. In cases of diphtheritic stenosis gradual dilatation by means of intubation tubes has been found better than thyroidotomy; but in this case the space between the cords is filled up with granulation tissue, and the pathologic condition is different from that coming on after diphtheritic involvement of the laryngeal mucous membrane. He agreed with Dr. Wood that it is a question whether these granulations will disappear spontaneously.

DR. M. H. FUSSELL exhibited

A PHOTOGRAPH ILLUSTRATING DR. WOOD'S CASE.

He said that he had seen 2 cases of perichondritis in typhoid fever, one occurring in a boy of seventeen, and the other in a man of thirty. This latter was convalescent from the fever, had only a simple hoarseness in the beginning, and the case was not recognized as serious until the occurrence of a severe cyanosis and stenosis. He refused operation, and died shortly afterward. The picture exhibited showed the result of the autopsy, in which complete necrosis of the cricoid cartilage was found. The boy of seventeen went through a severe attack of typhoid, and on the fortieth day developed a simple hoarseness. As Dr. Fussell had but shortly before seen the other case, this hoarseness greatly alarmed him. Even although watched carefully, the patient almost died, on account of the sudden final onset of the stenosis, and a delay in the arrival of a surgeon. He was tracheotomized by Dr. A. C. Wood, recovered entirely from the typhoid, was able to withdraw the tube at the end of six months, and lived comfortably afterward with a little stenosis. He was able to attend to his business as before, but about a year ago he died of appendicitis.

According to the statistics in Dr. Keen's book on the "Surgical Complications of Typhoid Fever," Dr. Wood's case is one of the rarest in point of its early age. Only 12 out of 221 reported cases were under fifteen years of age. The statistics also show a great preponderance of males. The laryngitis almost always comes on late in the disease, as a simple hoarseness frequently after convalescence is well established, and is frequently overlooked entirely, until the severe stenosis occurs. One should be on the lookout for this beginning hoarseness, and be prepared to do a tracheotomy upon the onset of stenosis. Dr. Keen's statistics show the mortality to be still very high, probably because in these cases operation was delayed too long. His younger case almost lost his life on account of the delay in the arrival of the surgeon.

Dr. Thompson S. Westcott reported a case with

PECULIAR PRESSURE SYMPTOMS DUE TO ENLARGED TUBERCULOUS BRONCHIAL LYMPH NODES

which occurred in an infant that died at the age of four months. The most advanced lesion was found in one of the bronchial lymph nodes, which was enlarged to the size of a pigeon's egg, and had undergone complete softening. It was so situated as to press upon the descending vena cava. In the last two weeks of life marked cyanosis of the head, neck and upper extremities was produced whenever the baby was held in a position increasing the concavity of the dorsal segment of the spinal column, but disappeared when the child lay flat upon its back. The lungs were studded with miliary tubercles, and one or two were found in the spleen. Death had followed a bronchopneumonia of the right upper lobe.

The child had been born in a private room in one of the city hospitals, and had been breast-fed exclusively, never having received artificial food of any kind. The mother and father were in good health, but there was an uncertain history of tuberculosis in the mother's family. The first symptoms of failing health had been noticed at the age of two months. Interest attaches to the case from the fact that at the time the baby was born a patient suffering with advanced pulmonary tuberculosis had occupied another private room across the hall from hers. The early appearance of the first signs of illness (at two months of age), and the advanced stage of disease in the bronchial nodes make it certain that the infection had been received very soon after birth, since the mother was then, and still continues, in good health, and the baby thrived normally until about two months of age, which would practically rule out an intrauterine origin of the disease. In the absence of other known exposure, he was inclined to attribute the primary infective source to the tuberculous patient in the room near the lying-in room at the hospital. He suggested either air-borne infection or more direct conveyance through the medium of nurses, who, in all likelihood, took care of both the mother and infant and the case of tuberculosis.

Dr. Willson said that the marked cyanosis that occurred when the baby was in the erect posture and its disappearance when lying down is contrary to the usual phenomenon in adults when there is tumor of the bronchial nodes pressing upon the trachea or vena cava. In nearly all mediastinal tumors the cyanosis appears or becomes more marked when the patient is in the recumbent posture. He then asked Dr. Westcott whether it had occurred to him that this might be a case of intrauterine tuberculous infection. Dr. Westcott had not stated why he had excluded that diagnosis. He (Dr. Willson) thought it especially probable in this instance, on account of the fact that the child's grandparents had had tuberculosis; that a brother or a sister had rickets; and that another child of the same parents had had a chronic and possibly tubercular diarrhea. An infection in the child itself had admittedly occurred within the first two weeks, it seemed probable to him that it had existed before birth.

Dr. D. J. Milton Miller asked whether any of the ordinary physical signs of enlarged bronchial lymph nodes had been present in this case, viz., dulness under the sternum, paroxysmal or brazen cough, Eustace Smith's sign, etc.

Dr. Westcott said that there had been no dulness behind the manubrium; no cough until within a few days of death, when bronchopneumonia developed; and no murmur when the head was thrown back.

Dr. Miller then said that he had asked this question because these signs are given in most text books as evidence of the presence of enlarged bronchial lymph nodes; but he had found them very seldom present, for it is not often that the bronchial lymph nodes become sufficiently enlarged to produce signs of pressure such as are caused by aneurysms or mediastinal tumors. Dr. Miller has used the Eustace Smith sign in examining children thought to have enlarged bronchial lymph nodes, but had seldom found it present; neither had he found the paroxysmal cough, resembling pertussis, nor the manubrial dulness nearly so often as is usually stated. In regard to the question of infection, he thought it probable that Dr. Westcott's case might have become infected in the way described by him. He had seen a child that died of acute miliary tuberculosis when quite young, who had lived for the first few months of its life in the same room with its tuberculous father. This man was in the habit of expectorating on the floor, and Dr. Miller thought that the infection had taken place directly through the respiratory passages, as it probably did in Dr. Westcott's patient.

Dr. Weber, who had been present at the autopsy, said that the lymph nodes were attached to the vena cava, and were slightly behind and to the right side. It was easy to see how the upright position with the thorax flexed and the head bent forward would cause the node to press on the vena cava and produce the symptoms.

Dr. Westcott said that he might have laid too much stress upon the family history. There was some tuberculous tendency in the mother's family, and the father seemed to be rather anxious to blame the trouble on the mother and her relatives. The question of tuberculosis was discussed at the time of the first child's death. This had suggested to the father the possibility that the diarrhea in the second child might be tuberculous; but, as it showed no signs of wasting disease, Dr. Westcott combatted that idea. The diarrhea was undoubtedly caused by a subacute catarrh of the bowel, and the child afterward became entirely well. The mother of the child is apparently in perfect health and has no evidence of tuberculous disease, and for this reason he thought it somewhat gratuitous to suggest the possibility of intrauterine infection. The child remained well until the second month, when it began to show signs of failing health. On this fact he had based his belief that the disease had been contracted prior to the second month; and the advanced stage of disorganization of the lymph node indicated that it might well have begun even before that time, probably during the first month; so that it is quite likely that it occurred at the hospital during the first two weeks of the child's life. He said that this case shows that one cannot be too careful about the surroundings of a lying-in patient, and that a general hospital, in which cases of all sorts are received, even in the private wards, is not a safe place to which to send a maternity case.

Dr. Alfred Hand, Jr., reported the following cases:

(1) UREMIC ONSET OF TYPHOID IN A CHILD THREE YEARS OLD; RELIEF BY LUMBAR PUNCTURE. (2) URTICARIA AS A SEQUEL OF DIPHTHERIA WHEN ANTITOXIN WAS NOT USED. (3) UNUSUAL COURSE OF MEASLES RASH.

Full reports of these cases are to be found in this number of Archives of Pediatrics, on page 844.

Dr. E. E. Graham said that the first case reported by Dr. Hand had interested him greatly, because it was a study of an unusual complication of typhoid fever. Albuminuria, if by this one means a trace of albumin in the urine, is quite a common complication, but acute parenchymatous nephritis is quite rare. Another point of interest is that if such patients recover from the typhoid, they almost invariably recover from the acute nephritis, although the mortality in the cases of acute nephritis complicating typhoid fever is very high. The acute nephritic condition seems to be entirely dependent upon the typhoid toxemia. Dr. Graham said that he judged from the chart that Dr. Hand's patient had recovered from the acute symptoms of uremia, but he did not remember whether there was entire recovery from the nephritis.

Dr. Hand, in closing, said that the last urinalysis before the child was discharged was entirely negative for any signs of nephritis.

Current Literature.

PATHOLOGY.

Menshikoff, W. K.: The Bacteriology of Measles. (*Russki Vratch.*, Vol. iii., No. 26, p. 927.)

A preliminary report of the discovery of a constant microorganism in measles.

The author carefully examined by means of cultures the nasal and pharyngeal secretions in measles as well as the pus of complicating otitis, etc., and he lays claim to the final discovery of the constant organism in measles. This is a short diplo-streptococcus. While not asserting that this coccus is the specific cause of measles, the author believes it to be responsible for many complications.

It thus appears that his diplo-streptococcus plays a role similar to that of the streptococcus in scarlet fever.

Further studies will show whether this new coccus has any specific connection with morbilli.

Moizard and Rabe: Lymph-Adenoma of the Intestine with Rapid, Febrile Course in a Child of Three Years. (*Annales de Méd. et Chir. Infant.*, May 1, 1904, p. 305.)

The case refers to a child of healthy parentage, puny from birth. Out of seven children, four had died of tuberculous meningitis. The initial symptoms were pains in the abdomen, constipation, increase in size of the abdomen with loss of flesh and strength. A large, firm, nonfluctuating tumor, irregular in outline and not tender to pressure, was palpated on the right side separated from the liver by an area of tympany and reaching near to the umbilicus. The diagnosis was made, of a fibro-plastic tuberculosis or intestinal sarcoma. No change in the condition was noted up to the date of death. Autopsy showed an absence of tubercular lesions. Underneath the liver and adherent to the large and small intestines was an enormous tumor of a hard elastic consistency. The appendix, mesenteric and bronchial glands, kidneys, seminal vesicles and prostate were all deeply invaded. Histological examination proved the growth to be a small, round-cell sarcoma of the lymphadematous type. Only 13 cases have been reported in children; 5 of these were under five years of age.

Delcourt, Albert: Osteomyelitis of the Calcaneum with Complications in a Child of Eleven Years. (*La Path. Inf.*, April 15, 1904, p. 78.)

The boy fell into a trench, spraining his right ankle apparently to no serious degree. In consultation, it was decided to apply inunction of mercury, which caused an urticarial eruption over the entire body. Shortly after the temperature rose, the child became delirious; swelling and tenderness in the foot were but slightly marked. The condition became rapidly worse, edema of the foot and leg was marked, with signs of a profound general infection. On incision, quantities of thick pus issued from the calcaneum which was denuded of its periosteum. The child died the night of the operation. Autopsy showed an osteomyelitis of the calcaneum, serofibrinous pericarditis, bronchopneumonia and suppurative arthritis of the right elbow.

MEDICINE.

Fairbanks, Arthur Willard: Hereditary Edema. (*The American Journal of the Medical Sciences*, May, 1904, p. 877.)

The literature of this unusual affection, which is probably of neurotic origin, is reviewed and several theories of its production discussed. Although hereditary it may not appear until well along in adult life; the members of several generations may be subjects of the disease. Unfortunately, these cases have a high mortality, 16 per cent., death being due to edema of the glottis in the fatal cases.

Trischitta, V.: Onanism in Infants and Young Children. (*La Pediatria*, March, 1904, p. 209.)

The author reports the case of a child, aged four years, who belonged to a neuropathic family and who exhibited a marked tendency to masturbation. No worms were found about the anus, but a vulvovaginitis was present. The latter was treated by appropriate local methods, and internally bromids and small doses of opium were given four times daily. The local inflammation disappeared, and the child ceased to masturbate within two weeks. The author urges the recognition that in small children masturbation should not be treated as a defect of morality, but as a disease depending upon a deficiency in nutrition of the body. In this case there was not true onanism, but a pseudoonanism, because true onanism is a symptom of a cerebal neurosis, and does not exist in young children. At this age masturbation does not have the same significance as in puberty, for in small children masturbation is nothing but a tic or a bad habit just as sucking the thumb is in infancy.

There is no question but that in very young children masturbation is quite frequent because it is accompanied by a distinct pleasurable sensation which the child seeks mechanically to reproduce. Some nursemaids even resort to teaching children to masturbate in order to prevent them from crying. In young children the prevention and treatment of masturbation depends largely upon the preservation of the genitals of the anal region in a state of scrupulous cleanliness and in attention to constipation, urticaria, and other sources of irritation. The child should be watched discreetly; it should be occupied with something else, and the instinctive act to which it is inclined should be gently prevented. During the night the child should wear clothing that covers the genitals well, but does not irritate the parts. At times the hands may be tied, and in nervous children bromids and opiates may prove of value.

Zaussailoff, M. A.: The Treatment of Chorea with Salicylate of Soda. (*Wratchebnaja Gazeta,* 1904, No. 6.)

The author has treated a number of choreic children with salicylates. The patients were between three and twelve years of age, and the rheumatic diathesis was entirely excluded in all. The remedy was prescribed thus: Sodium salicylate, 4.0; syrup, 20.0, and water 120.0. Sig.: Dessertspoonful three to four times daily.

The effect was striking in all cases, the improvement being steady and rapid, even in those patients who had not been benefited by other treatment.

In some cases the author administers arsenic together with the salicylate.

Simon, L. G.: Typhoid Fever with Appendicular Onset. (*Annales de Méd et Chir. Inf.*, May 1, 1904, p. 310.)

The child, seven years old, was suddenly taken with intense pain over the appendix, headache, vomiting diarrhea, increase in pulse and temperature, with resistance in the right rectus muscle and some meteorism. A tentative diagnosis was made of appendicitis, the case to be watched and treated palliatively. In forty-eight hours the muscular resistance disappeared with abatement of the other symptoms, and a few rose spots appeared on the chest and abdomen. The diarrhea continued. Serodiagnosis was negative. In five days the rose eruption was profuse, serodiagnosis positive; spleen not palpable, and all general symptoms decreased in severity. Twelve days after the onset, the girl was completely cured. The case was, therefore, one of the socalled abortive types of typhoid, resembling in its onset an acute appendicitis. As to the pathology, it seems logical to admit that the lymphoid tissue of the appendix was undergoing the same changes that occur in Peyer's patches, and that the combination of symptoms was due to an abnormal localization of the typhoid process.

Dube, J. E.: Contraction of the Pulmonary Artery. (*L'Union Méd. du Canada*, May, 1904, p. 255.)

This occurred in a boy fourteen years old, born at term, delicate from birth. At an early age shortness of breath was noted, this becoming very marked on the occasion of a severe fright. He subsequently showed signs of unusual weakness and nervousness, followed by fainting spells with no apparent provocation. On examination of the thorax, a vaulting of the sternum with lateral depressions was visible, probably of rachitic origin; the apex was located in the sixth interspace outside the nipple line: there was also epigastric pulsation. On palpation the cardiac impulse and a thrill in the second left intercostal space were plainly felt. There was a loud systolic blow heard all over the chest anteriorly and posteriorly and transmitted to the abdominal and lumbar regions. The maximum intensity seemed to be in the first left intercostal space near the sternum. On percussion the heart dullness showed an increase to 10 cm. long, 8 cm. broad. A diagnosis, as above, was made on the following:—(1) Systolic murmur, at the base, its character, intensity and roughness. (2) The thrill, with its pathological situation. (3) Hypertrophy of the right ventricle.

Orefice, E.: Contribution to the Treatment of Chronic Nephritis in Children. (*La Pediatria*, March, 1904, p. 188.)

The author describes his experience with renadene in the treatment of renal disease in children. This remedy has been recommended recently by Mensi. The treatment comprised an exclusive milk diet with the addition of some eggs during the later stages of the cure. Renadene was administered, beginning with doses of 0.5 gm. per day (in a child aged five years), and increasing up to 4 gms. daily, in milk. Even after the first doses, the amount of urine increased regularly. The remedy was discontinued for a day or two at times, when nausea appeared, but it was resumed without further trouble. The effect was a gradual disappearance of the albumin; in four months no traces of it could be detected. Then, besides milk and eggs, the patient was allowed vegetables and meat without increasing the albuminuria.

The urine showed at times small traces of albumin after the remedy had been discontinued, but the author thinks that this result, obtained in a relatively short time, justifies a favorable verdict as regards the efficiency of renadene.

SURGERY.

Gwyer, Frederick: Lymphatic Constitution; Care of the Lymphatics During and After Surgical Operations. (*Annals of Surgery*, May, 1904, p. 641.)

A fatal result is reported following the simple operation of removing a few lymphatic nodes from the axilla of a boy six years old. Chloroform was the anesthetic; there was very little bleeding and the boy was left in good condition after the operation. Fifteen hours afterward the boy was delirious, and had a rapid pulse with a temperature 103°F. Coma followed the delirium, the temperature rose to 105°F., and the boy died 24 hours after the operation. Death was considered as due to the lymphatic diathesis.

In view of the high temperature, the delirium and the rapid termination, Gwyer suggests that possibly greater care in the handling of the lymphatics might diminish such fatalities. He advises careful ligation of the lymphatic vessels before removing the nodes, and covering with vaselin or oil all wound surfaces with which pus may come in contact—as in empyema.

Lucas, R. Clement: Strangulated Inguinal Hernia in an Infant Twenty-eight Days Old; Operation Two Days Later; Recovery. (*The British Journal of Children's Diseases*, June, 1904, p. 243.)

Shortly after a swelling of the scrotum had been noticed the infant began to scream and vomited repeatedly. The vomiting continued for two days, and meanwhile there was no action of the bowels.

At the operation a small knuckle of intestine was found, dark purple but still lustrous; it was slipped back into the abdomen after the constriction had been relieved. The vomiting ceased and the bowels acted during the night following operation.

Lucas remarks that strangulated hernia is apt to be overlooked, because vomiting and colic are nearly always the result of injudicious feeding. The symptoms peculiar to infants are: violent and uncontrollable screaming, recurrent vomiting, a tendency to suppression of urine and constipation, a great tendency to rapid collapse. Stress is rightly laid upon the rapid effusion of serous fluid into the sac, rendering it translucent like a hydrocele; and effusion into the general peritoneal cavity.

HYGIENE AND THERAPEUTICS.

Rotondi, G.: Contribution to the Study of Lab-Ferment. (*Riv. di Clin. Pediatr.*, 1904, No. 2, p. 112.)

The conclusions of the author, after a series of experiments, were as follows:—(1) During the coagulation of milk there is formed a new proteid substance as the result of the action of lab-ferment. This substance is derived from the splitting of caseinogen, and remains dissolved in the serum. (2) The amount of nitrogen which enters into the composition of this new substance (serum proteid of milk) constitutes one-tenth of the total nitrogen of milk. (3) The serum proteid of milk may be placed in a class mid-way between the primary albumoses and the native proteids. These researches are interesting because, as a rule, lab-ferment is considered as an injurious substance in the digestion of milk. If the transformation of the caseinogen produced by lab-ferment be remembered, it will be seen that, owing to proteolytic action, lab-ferment may be considered digestive in the true sense of the word.

Fede, F., and Finizio, G.: Researches on the Digestibility of Meat and on the Value of the Digestive Ferments of Commerce. (*La Pediatria*, No. 5, 1903.)

The authors conclude from their researches that the commercial digestive ferments are all deficient in digestive powers. Least active are the pepsins; the pancreatins, and the papains are somewhat more efficient. They believe, however, that these ferments should not be condemned in therapeutics, because they do assist in the digestion of proteids.

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Original Communications.

RECURRENT VOMITING.

BY B. K. RACHFORD, M.D.,
Cincinnati, O.

SYNONYMS.—Cyclic vomiting, lithemic vomiting, periodical vomiting, bilious vomiting. In the present state of our knowledge it is probably best to retain the name "recurrent vomiting," originally used by Gee in describing these cases.

DEFINITION.—Recurrent vomiting is a symptom group closely related to migraine. It is autotoxic in origin and characterized by recurrent attacks of nausea, persistent vomiting, and great prostration.

ETIOLOGY.—(1) *Predisposing Causes.—Age.*—The great majority of these cases occur during infancy and childhood. The disease may make its appearance as early as the third month, but it is more common between the third and tenth year. The tendency is to spontaneous recovery, but the attacks may continue into adult life, or they may be transformed into migraine.

Sex has little influence. A small majority of the cases, however, occur in girls.

Season.—It is somewhat more common in winter than summer.

Heredity is the most important predisposing factor. A family history of *migraine* or gout is present in nearly every case. A general neurotic inheritance is common and a family history of hereditary recurrent vomiting is sometimes noted.

Constipation.—Nearly all of these patients are constipated and there can be little doubt but that this is an important factor in their etiology. The constipation with the resulting intestinal toxemia no doubt contributes to the general irritability of the nervous system in these cases.

Habits of Life.—Mental overwork and nerve excitement, when combined with an indoor life and confinement in ill-ventilated school-rooms, are important predisposing factors.

Station in Life.—Nearly all these cases occur among the hereditary rich and refined. The poor and uncultured are comparatively exempt. This probably means that the hereditary gouty tendency, with the mental overwork and nerve excitement, which is so common among cultivated people, are such important predisposing factors that the poor and unrefined, in whom they are rare, are not especially predisposed to this disease.

(2) *Direct Causes.*—Nearly all writers are agreed that recurrent vomiting is an autointoxication. My own belief is that both auto and intestinal toxins may play a role in producing this symptom group, but I do not believe that it is always produced by the same auto or intestinal toxins. I am of the opinion, however, that the largest percentage of these cases is produced by toxins, either closely related in their formation to or identical with the purin bodies. The close hereditary relationship which exists between this condition and gout and migraine lends strong evidence in support of this view, and the urine findings elsewhere noted strengthen this opinion.

The acid intoxications which occur during the attack are to be considered rather as effects than causes, and belong, therefore, to the symptomatology and pathology, rather than to the etiology.

Liver Incompetency.—A functional incompetency of the liver is, I believe, an all-important factor. The liver in these cases is probably, by heredity, functionally incompetent, and in addition to this it is perhaps called upon by reason of the constitutional gouty taint to do an unusual amount of work in converting ammonia and the purin bodies into urea. Under these conditions we have periods of temporary functional incompetency on the part of the liver, and as a result the auto and intestinal toxins are poured into the general circulation, and produce in some instances recurrent vomiting, and in other instances migraine. In a few days when these poisons have been eliminated and the liver has resumed its function, the acute attack is over.

(3) *Exciting Causes.*—Mental and physical fatigue, mental excitement, nervous strain, fright, anger, and disappointment are common exciting causes. Over-eating is one of the most potent of the exciting factors and *acid* fruits, berries, vegetables and wines may precipitate an attack. Intestinal toxemia and reflex irritation from the intestinal canal, the eye, nasopharynx, and

genitourinary organs may also be classed among the exciting causes. These exciting factors are at times apparently so important and so definitely related to the onset of the attack that the physician may be inclined to overestimate their importance and thus misinterpret the true nature of the disease. It should always be kept in mind that in these patients, there is a tendency to the recurrence of autointoxications, which are the true causes of the attack, and the particular reflex factor which happens to touch off the paroxysm is not to be considered as the all-important causative factor.

SYMPTOMS.—Prodromes are almost always present from a few hours to a few days before an attack. Among the more constant warning symptoms are flushings of the cheek, coryza, general restlessness, nervous irritability, sleeplessness, sallowness of complexion—dark rings under the eyes, general malaise, constipation, coated tongue, a peculiar odor to the breath and loss of appetite. Not all of these prodromes are present in any one case, but in the great majority of cases the mother or nurse, having observed the onset of other attacks, will recognize by certain of these warning symptoms that a paroxysm or recurrent vomiting is imminent.

Vomiting.—Following the prodromes, from six to forty-eight hours, vomiting occurs. This is the most characteristic and prominent symptom. In the beginning the vomiting may not be severe, food only being rejected; in a few hours, however (six to twenty-four), it becomes very severe, and accompanied by more or less constant nausea, not only everything that is taken into the stomach is rejected, but bile and much mucus sometimes tinged with blood is expelled. In severe cases the vomiting is accompanied by violent retching, and is oft-repeated without apparent cause. The severe vomiting may continue from one to six days, and then as a rule disappears as suddenly as it came, and with its disappearance convalescence is established. Following an attack the stomach, as a rule, resumes its functions, and within five or six days the patient is taking his ordinary food, without the slightest discomfort on the part of the digestive organs. From this time on the patient rapidly regains his health and strength, and may manifest no gastric symptoms whatever, until the next attack, which may recur within a month, but as a rule the interval is from two to six months. Subsequent attacks are very similar in their symptomatology to the initial attack. They may vary, however, very greatly in severity and duration. The first attack is, as a rule, diagnosed as a case of ordinary toxic gastritis, due to ptomain or other poisoning, and every effort is made to discover in the food, or vomited matter, the cause of the attack. When the second and third attacks follow, in spite of careful feeding and without apparent cause, the physician recognizes their constitutional origin and makes the diagnosis of recurrent vomiting.

While it is the rule that patients who suffer from recurrent vomiting may have in the interval no stomach or intestinal disturbance, yet this is a rule that has many exceptions, especially in patients under five years of age. Many of these are prone to have gastroenteric disturbances at all times from very slight causes, and many of them during the first three years of life have more or less trouble digesting cow's milk. In these cases frequent attacks of gastric indigestion with mild intestinal fermentations will now and then be broken in upon by an attack of recurrent vomiting, and following this acute attack the patient again returns to his usual condition of health. These chronic cases are, I believe, analogous to those of chronic migraine described elsewhere, and while they are vastly more common in young infants they may occur at any age.

Constipation which precedes the attack becomes, as a rule, very obstinate during the attack, and owing to the irritable condition of the stomach, which forbids medication, and the arrest of peristalsis which accompanies the attack, it is at times almost impossible to relieve it. When the constipation is relieved by cathartics, or by the cessation of the attack, the discharges are putrid. A few of the cases reported, have had loose putrid movements throughout the attack, and this, while unusual, is more likely to occur in very young patients.

Thirst.—While there is absolutely no desire for food in most cases, thirst is a striking symptom. The little patients are frequently asking for water, even when it is immediately rejected. When the attacks are prolonged, and when no food or water has been retained for days, the thirst is excessive and there is usually a parched dry tongue.

Emaciation is great in the aggravated, long-continued cases. There are few diseases that produce more emaciation in a shorter period of time. As little or no fluid is retained in many of these cases, the tissues are drained of water, and as a result the general emaciation is very rapid. The abdomen is boat-like or flattened, the eyes are sunken and this, with the anxious expression of countenance, gives the impression of great danger to life.

The prostration in these cases keeps pace with the emaciation. In all cases it is marked, and in some cases so extreme as to demand the most powerful stimulants to tide the patient over the attack.

Fever is present in nearly every case under ten years of age. From this time on fever is less common until in adult life it is, as a rule, absent. The fever occurs early in the disease, often among the prodromes. It may continue for two or three days varying in height from 101° to 105° F. As a rule, after the second or third day, the temperature commences to subside, and in the latter stages may be subnormal. At times the fever subsides very early in the attack, with the onset of severe vomiting.

The pulse is irregular, as a rule, and usually rapid.

The tongue in the beginning may be coated, but in the latter stages of severe attacks is dry. The peculiar acetone odor of the breath becomes more marked as the attack progresses. A few of these cases complain of sore throat during the attack and in these cases the pharynx and tonsils may be irritated.

Respiration may be sighing, or rapid and panting, out of proportion to the pulse and temperature. The respiratory phenomena in this disease are probably due to the direct irritation of these centres by toxins.

Narcotism, which marks the characteristic close of the migrainous attack is, from my own experience, not uncommon in this condition. Almost nothing is said concerning this symptom in the reported cases. I am, however, of the opinion, that in nearly all of the severe cases there is, in the latter stages, a tendency to somnolence, and that a prolonged sleep, not infrequently, is followed by the first indications of improvement. In the earlier cases of this disease which I reported, I failed to note this symptom.

Gastric pain is not present during these attacks in children. I believe, however, that in the adult, gastric pain of great severity may occur, associated with a severe recurrent vomiting. In some of these cases, at any rate, we have a symptom group exactly similar to that of the child, plus the gastric pain, and these painful attacks may occasionally alternate with painless attacks of recurrent vomiting or with migraine. These are, perhaps, the cases of periodical vomiting described by Leyden.

Nervous Symptoms.—While patients suffering from recurrent vomiting may be perfectly free from gastroenteric disturbances during the interval, they are, one and all, nervous, presenting variable degrees of general nervous excitability and restlessness. Snow described a case in which convulsions occurred at the onset of nearly every attack, and I have seen 2 such cases. Many of these children are precocious, and this precocity, like the precocity of migrainous children, may, if properly guarded and restrained, continue throughout adult life. The precocity of the gouty child, whether the child be subject to any of the gouty explosive neuroses or not, is to be distinguished from the precocity which occurs in tuberculous children. Children of tuberculous type are usually undersized and whimsical, and their precocity, which is coupled with physical inferiority, is fitful and sadly lacking in symmetry. The mental precocity of the gouty child, however, does not necessarily mean physical degeneracy, and it may, if properly treated, be sustained and continued throughout the life of the individual.

Urine.—The urine, in a case described by Holt, resembled that passed during an attack of migraine. It becomes more scanty as the attack progresses. It is very concentrated and strongly acid in reaction. This acidity causes a rather heavy deposit of uric acid and urates, although the percentage of uric acid is not increased. The xanthin bodies, however, are in great excess. Albumin may be present in small quantities during the attack, although this is rather uncommon. Acetone and indican are present in perhaps all of the severe cases. Many observers have found acetone in the urine of these cases, and Marfan published a series of cases, which he described as "vomiting with acetonemia," and suggested that acid intoxications may be a phase of this disorder. More recently Edsall found not only acetone, but diacetic acid and oxybutyric acid in the urine of a number of these cases.

DIAGNOSIS.—The diagnosis of recurrent vomiting is easily made if the above symptom group is kept in mind. No disease presents exactly the same picture. In the atypical cases, however, and especially in the first attack, there may be considerable difficulty. But after the second and third attacks the nature of the disease is made plain. In the first attack the condition is most commonly mistaken for a ptomain or other toxic gastritis. The intestinal symptoms, however, which develop in gastritis, and the cessation of the vomiting under starvation and proper treatment should enable one to make the diagnosis.

Intestinal obstruction, as Griffith suggests, may probably offer the greatest difficulty in differential diagnosis, but the absence of pain and of bloody mucus in the stools and of any tumor, with the presence of the characteristic symptom group, above described, should be sufficient to clear the diagnosis.

The presence of acetone in the urine with the other urine findings, above noted, would assist in making the diagnosis.

PROGNOSIS.—The prognosis, so far as recovery from the attack is concerned, is good. The vast majority of these cases recover. It should be kept in mind, however, since a number of fatal cases have been reported, that there is a possibility of a fatal ending. The prognosis, so far as the prevention of these attacks, is also good. Most of these cases can be cured, and all of them can be greatly benefited. Under proper treatment the attacks cease, and the child's general neurotic condition greatly improves. This improvement goes on, and as the child grows older its nervous system becomes more stable and the tendency to these recurring attacks is overcome. In the untreated cases these attacks may be transformed into migraine or epilepsy.

PATHOLOGY AND NATURE OF THE DISEASE.—Little is known of the pathology of this disease. An autopsy reported by Griffith showed necrotic changes in the mucous membrane of the stomach and intestine, and slight parenchymatous alterations in the pancreas, spleen and kidneys and fatty infiltration of the liver. Our present knowledge of this condition justifies us in the belief that the disease is an autointoxication, produced by toxins closely related, or identical with the purin bodies, and that a secondary acid intoxication occurs, which may contribute to the symptom group in the later stages of the attack. The autotoxins in this condition select the vomiting centre in the medula as their point of attack.

The close family relationship which exists between migraine and recurrent vomiting has been previously noted, and I wish here, especially, to note the fact that I have records of 4 of my own cases where typical attacks of recurrent vomiting were changed into typical attacks of migraine, as the children grew older.

In the present state of our knowledge, acetonuria means an excess of diacetic and oxybutyric acid in the urine, we may infer, therefore, that in all of the reported cases in which acetone occurred in the urine, these acids were also present. Von Noorden says: "Owing to the fact that this acid (oxybutyric) is so closely related chemically to acetone and diacetic acid, one is justified in suspecting its presence in the urine whenever these two bodies are excreted in considerable quantities. As a matter of fact, one always succeeds in finding the acid under these circumstances." In the light of these observations published reports warrant the inference that acetonuria, with at least a mild degree of acid intoxication, occurs after the onset of the attack in perhaps all of the severe cases. The acid intoxication, however, is in this disease, as it is in many others, a purely secondary pathological process. Von Noorden believes that all acid intoxications, produced by the presence in the tissues of acetone, diacetic and oxybutyric acids, are due largely, if not wholly, to an insufficient intake of carbohydrates food, or to some fault in the carbohydrate metabolism. A study of acid intoxications reveals the fact that this form of secondary autointoxication very commonly occurs in diseases which produce profound nutritional disturbances. In recurrent vomiting, therefore, we have all the conditions necessary to produce acid intoxications; first, an insufficient intake of carbohydrate food; second, profound nutritional disturbances, and third, faulty carbohydrate metabolism produced by the functional incapacity of the liver. The acid intoxications in this condition are, therefore, secondary rather than primary. It may further be noted that the characteristic symptom group which this disease presents is not that of acid intoxication, but in the later stages of this disease, when the acid intoxication is more marked, it is possible that the respiratory disturbances, the increased pulse rate, the lowering of the body temperature, and the tendency to somnolence may perhaps be partly due to this intoxication.

TREATMENT.—*Of Attack.*—If seen in the prodromal stage, ¼ of a grain of calomel, and 5 grains of bicarbonate of soda, should be given every half hour until 2 grains of calomel are taken. And if the stomach be not too irritable, the calomel should be followed in two or three hours by a saline laxative, and four or five hours later by benzoate of soda in from 3 to 8 grain doses every two or three hours, dissolved in essence of pepsin and peppermint water. No food whatever should be given. Water may be allowed if the stomach will retain it.

After the attack is well on the nausea and vomiting preclude not only all food but all stomach medication. The calomel and bicarbonate of soda, however, may be tried at any stage of the attack, and if the nausea and vomiting are not greatly aggravated by them they may be continued. At intervals throughout the attack, water may be allowed, even though the stomach rejects it, but no food is to be given until the patient is able to retain water in small quantities.

In cases where food and water are not retained by the stomach it is advisable to give, at intervals of every eight to twelve hours, a high rectal enema of physiological salt solution, or bicarbonate of soda solution, a tablespoonful to the pint of water. The tissues, as a rule, are so starved for water that these solutions are absorbed, and the water thus absorbed serves to flush out the various excretory organs and in this way promote the excretion of autotoxins. The bicarbonate of soda given by the rectum, or the mouth, serves the purpose of neutralizing acids; thus removing or preventing the secondary acid intoxications which occur in these cases. Edsall's suggestion that very large doses of bicarbonate of soda be given by the mouth is a good one in those cases in which the soda is retained, but my experience is that the cases which need this treatment most are the ones which retain nothing on the stomach.

In the most aggravated cases where prostration is extreme, and stimulation strongly indicated, sterile physiological salt solution may be injected into the subcutaneous tissues. In cases of this kind, also, it occasionally becomes necessary to give morphin hyperdermically. This remedy acts specifically in the control of the vomiting, and in the worst cases it is a life-saving measure. Small doses of from 1-10 to 1-20 of a grain, depending upon the age of the patient, are usually sufficient.

Curative Treatment.—It will be found that many of these children prefer an indoor life and intellectual pursuits. For habits of this kind, an outdoor life, with moderate exercise, in the open air and in a suitable climate, should be substituted. Since these cases occur very commonly among the well-to-do, it is often possible to prescribe an outdoor climate the year around. Our southern states, and especially southern California, are admirable winter climates for these children. While the region of the Great Lakes, or the sea-coast of our North Atlantic States, offer favorable climatic conditions during the summer. Sea voyages are also beneficial.

It should be remembered that while the climatic treatment of many of these cases is important, it does not take precedence over the medical, dietetic, and general hygienic treatment, which may be carried out in any climate; and my experience leads me to believe that these cases do better at home during the greater portion of the year, provided the home offers favorable opportunities for carrying out the general treatment here outlined. But even where the treatment is carried out under favorable home conditions a change of climate for a few months during the year is advisable, and by this change the hot months of summer or the cold of winter may be avoided, as the climatic conditions at home may dictate.

These children should, as a rule, be taken out of school, and lead as quiet and uneventful lives as possible. Mental stimulation, nervous excitement, and all forms of mental and physical fatigue are to be avoided for a number of years, or until the child's physical and nervous condition justifies a return to the ordinary routine of child life.

Diet.—The diet should be carefully restricted, and selected. In beginning the treatment all raw fruits, acid vegetables, such as rhubarb and tomatoes, salads, tea, coffee, beef-juice, beef tea, and alcohol, are to be avoided, and the child should be allowed to eat but sparingly of beef and sweets. The following foods may be allowed: Milk, cocoa, vegetable soups, cereals, well-cooked vegetables, cooked fruits, eggs, fish, chicken, mutton and, occasionally, beef. Children suffering from recurrent vomiting have, as a rule, in the interval between the attacks, abnormally large appetites. They are, therefore, to be carefully guarded against taking an excess of food of any kind, and are to be made to cultivate the habit of drinking water between meals.

Medical Treatment.—Before beginning the medical treatment sources of reflex irritation should be carefully sought for, and, if possible, removed. Constipation, which is constantly present in this condition, demands our most thoughtful consideration. It must be relieved. This can usually be done by palatable solutions of sulphate and phosphate of soda. These saline laxatives are advisable in the beginning of the treatment. Later, palatable mixtures of rhubarb and cascara sagrada may be used. Enemata are not to be relied upon in the treatment of this condition. Abdominal massage may sometimes relieve the constipation and, where it is necessary to resort to massage for this purpose, it is advisable to give the patient general massage at the same time.

In patients of feeble constitution, so situated that an outdoor life with moderate exercise cannot be had, general massage is a very valuable remedy, apart from the influence it may have upon constipation.

In the medical treatment of this condition, however, the wintergreen salicylate of soda and the benzoate of soda, put up in palatable solution in a dose to suit the age of the child, are our most valuable remedies. The following prescription will be found of service:

℞—Sodii salicylatis (gaultheria)	ʒi
Sodii benzoatis	ʒii
Pepsin essence	f℥ii
Aquæ menth. pip	f℥ii

M.S.—Teaspoonful after meals for a child six years of age.

In the more severe cases this prescription must be continued for months at a time, and, after this, is to be given once a day for an indefinite period.

The general treatment here given is principally the same as that outlined by me in 1898, in the "American Text Book of Diseases of Children," and many years of experience have taught me that under this treatment the prognosis, even in the most severe cases of recurrent vomiting, is good not only as to the prevention of attacks, but also as to permanent recovery.

323 Broadway.

Isoagglutination of Human Blood, Especially in Childhood.—J. Langer (*Zeit. f. Heilk.*, Bd. XXIV., Heft V.) as the result of his investigations, arrives at the following conclusions: (1) In human serum there is a variety of agglutinins, the erythrocytes of one individual being capable of agglutination by several kinds of serum. (2) The serum of the newborn seldom contains isoagglutinins, but the erythrocytes are as capable of agglutination as those of older children. (3) The acquisition of agglutinins occurs in the first months of life. It is still undetermined whether they arise by simple absorption of the isoagglutinins found in colostrum and milk, or whether their formation is incited by other means. (4) The formation of isoagglutinins is unaffected by the absorption of hemorrhagic effusions (contusions, cephalhematoma, etc.), or by acute or chronic infectious diseases. (5) Isoagglutination is a phenomenon which has nothing in common with isohemolysis.—*American Medicine.*

PYLORIC STENOSIS IN INFANCY. REPORT OF A CASE; GASTROENTEROSTOMY; RECOVERY.*

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AND

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Since the attention of the medical profession was directed to the clinical features resulting from a stenosis of the pylorus, a large number of cases have been recorded, and the condition is no longer looked upon as an anatomical curiosity.

The following case is of more than usual interest on account of its successful termination after surgical interference:

Esther S., born January 31, 1902, and admitted to St. Margaret's House, January 3, 1903, aged eleven months. She is the second child of Russian Jew parents, whose limited knowledge of English makes a complete history difficult. Both parents are strong and healthy, as is the other child, who is thirteen months older. The pregnancy and labor were uneventful, and the child weighed ten pounds and a half at birth. The mother nursed the baby at the breast exclusively, until the admission to the hospital, although she confessed to having given her a few things to eat from the table after the eighth month. The child gained rapidly in weight during the first three or four months. The exact date when the vomiting commenced is not known. It is supposed to have begun about the fifth or sixth month, but was not regarded seriously, as the mother had been told it was a healthy sign to have the baby spit up after feeding. After this time a little food came up after each nursing.

About the end of November she had an attack of bronchopneumonia, which was followed by empyema. This was aspirated three weeks before admission, and on account of the vomiting and poor physical condition, she was brought to St. Margaret's House.

On admission, the child weighed 15 pounds, 8 ounces. The body was emaciated, and the skin and mucous membranes pale. The nostrils dilated with each respiration, but there was no cyanosis. The breathing was labored, and the respirations varied from 34 to 54 a minute. The temperature ranged from 99 to

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* Read by title before the American Pediatric Society, Detroit, Mich., May 31, 1904.

101.5, and the pulse was strong and regular, numbering from 100 to 140 beats a minute. The lower border of the liver and the spleen were palpable. The left lung was slightly bulging and flat on percussion. The apex beat was one inch to the right of the nipple line in the fifth interspace. The breath sounds could be plainly heard over the area of dullness. The examination of the blood showed 35 per cent. hemoglobin, 21,700 leukocytes, 5,144,000 red corpuscles. Smears from the pus showed streptococci. A rubber drainage tube was inserted on January 23 and removed February 10, when the lung symptoms cleared up.

The most unpleasant feature of the case was the persistent vomiting. A portion of each feeding would be rejected from ten to thirty minutes after each bottle. Very often she would hold the regurgitated food in her mouth for several minutes, and again attempt to swallow it. Lavage was faithfully kept up twice a day for three weeks, without any influence on the vomiting, and for two weeks all the food was administered through a stomach tube without success. The food itself was changed in composition and in the amount and frequency of feeding with no effect on the vomiting. Fluids were withheld and only semi-solid nourishment given, and the food was predigested without helping the condition. Many vaunted medicinal remedies were administered without benefit. The child seemed ravenously hungry, and always took the food wtih great eagerness.

In five months she lost 3 pounds and 6 ounces, and was greatly emaciated. The stomach contents were examined a number of times, but no free hydrochloric acid or lactic acid was detected. The vomiting material was always curdled and sour, but it was never tinged with bile. The bowels were always very constipated, and high enemas were given daily. The movements themselves were hard and scybalous. The abdomen was sunken and the peristaltic movements plainly seen. The stomach was dilated and extended down to about the level of the umbilicus. Repeated examinations failed to detect a tumor of the pylorus.

The diagnosis of pyloric stenosis was based on the incessant vomiting, dilated stomach, constipation, absence of bile in the vomited matter, and steady loss in weight. In view of the futile attempts to alleviate the condition by medical treatment and the apparently hopeless state of the child, permission was granted for an operation. The operation was performed on June 8, 1903, under ether narcosis, by Dr. Elting.

A median incision 8 cm. long was made from the ensiform process downward. The abdominal wall was extremely thin, the abdominal muscles atrophic. Immediately on incising the peritoneum, the greatly dilated stomach presented in the wound. Examination of the pylorus showed it to be very firm and thickened for a distance of 2½ cm. The transverse diameter of the pylorus was about 2 cm. The lumen appeared to be greatly reduced and the stenosis pronounced. There were no adhesions about the pylorus, and no evidence of an inflammatory process, the peritoneum being smooth and glistening. The stomach was at least four times its normal size. The walls were extremely thin. A loop of the jejunum was drawn up, and at a point about 40 cm. from the duodenum an anterior gastroenterostomy was performed after the method of Kocher, according to which a spur is made in the jejunum and the intestine is attached transversely to the lowest part of the anterior wall of the stomach. Catgut was used to unite the mucous surfaces, and over this two layers of continuous silk sutures.

The introduction of the sutures into the stomach and bowel was rather difficult, because of the paper-like thinness of the walls of these viscera. The operation was completed with a minimum of handling of the stomach and intestine in order to avoid shock. The peritoneum was closed with continuous catgut. The fascia and muscle were closed with interrupted catgut, and the skin with subcutaneous catgut. The time of the operation was forty-five minutes. The patient appeared to be in as good condition after the operation as before, which, however, was decidedly bad. During the night previous to the operation, the nurse in attendance on two or three occasions thought the child dying, but it was revived by means of injections of brandy and strychnin. The wound healed per primam, and has remained firm and strong ever since.

Subsequent History.—Shortly after the operation she vomited blood. On June 9 was given a bottle of peptonized milk and barley, which was retained. She vomited some bile during the day. The food was gradually increased, and a number of bottles were retained, although she would vomit several times a day. A soft yellow stool was returned after an enema on June 14. The first soft spontaneous movement was on June 18. The child improved steadily, and after four weeks the vomiting occurred only occasionally. The food was increased gradually, and the child gained steadily in weight, and left St. Margaret's on December 17, weighing 22½ pounds. Nine months later she weighed 30 pounds, and seemed perfectly well. The weight chart shows the rapid and steady gain after the operation.

Stenosis of the pylorus in infants is not a very rare or unusual condition. Cautley and Dent, in an essay read before the Medico Chirurgical Society, of London, in 1902, appended a bibliography of 109 references.

They collected 69 cases, and in 19 of these an operation had been performed. We have searched the literature up to August, 1904, and have found 66 cases in infants under twelve months in which the diagnosis was confirmed by autopsy; 12 cases in which no autopsy was reported; 27 cases diagnosed as pyloric stenosis, but ending in recovery, and 40 cases in which a surgical operation had been performed, making 145 cases in all. These cases are nearly all reported by specialists, so that it is fair to presume that the oft-misused and misunderstood diagnosis of marasmus has been given to describe the condition without any recognition of the underlying cause.

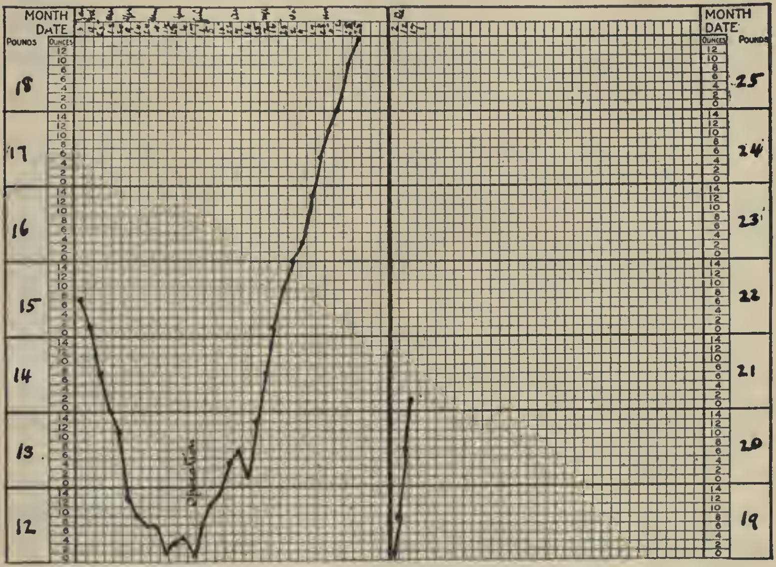

CHART SHOWING DECREASE IN WEIGHT BEFORE, AND INCREASE IN WEIGHT AFTER, THE OPERATION.

We propose to discuss only briefly the pathogenesis of this disease. In order to better appreciate this condition, we will review a few of the theories that have been advanced, and consider certain points in the anatomy of the parts involved.

The stomach has only slight powers of absorption or assimilation, and is more a motor than a digestive organ. The muscular tissue is made up of three sets of fibres, all of which extend to the pylorus. The stomach proper has also a secretory function, but the work of the pylorus is chiefly motor.

The circular set of muscular fibres are greatly increased at the pyloric orifice, forming what is called the sphincter pylori. The cardiac end has no special sphincter, and gas and liquids can readily pass through it during digestion. The mucous membrane at the pylorus is thicker and forms a fold known as the pyloric valve. There are traces at the pars plyori of a second gastric chamber in the bulging called the autrum pylori. The gastric cells and tubules in the neighborhood of the pylorus differ in construction and function from those located elsewhere in the stomach.

The pyloric region is essentially one of considerable structural variability. The pneumogastric nerves supply both motor and sensory filaments. Bechterew has shown that by irritating one branch of the pneumogastric, without interfering with the others, the cardiac end of the stomach will dilate, while the stomach and the pylorus remain contracted. This proves that each portion of the stomach has its special nerve filament. The splanchnic nerves connect the stomach with the sympathetic nervous system. The pylorus has the power within itself of contraction or dilation, and the contraction is always increased by the ingestion of food.

A stenosis of the pylorus may occur, according to some authors, as a congenital malformation. The circular muscular fibres are excessively developed, producing a violent contraction of the sphincter with the resulting retention and subsequent vomiting. In other words, the claim is made that this is a primary condition where "Nature, in her extreme anxiety to provide an efficient pyloric sphincter, has over-exerted herself, and has produced too great a quantity of muscular tissue." Flynn points out the similarity of the pylorus with the gastric mill in insects and crustacea and with the gizzard in birds. He thinks that hypertrophic stenosis is a reversion to the edentate pylorus as seen in the armadillo, or the great ant eater, and quotes Darwin as saying that "certain structures regularly occurring in the lower members of man's own class occasionally make their appearance in him, though not found in the human embryo; or, if normally present in the human embryo, they become abnormally developed, although in a manner which is normal in the lower members of the group."

If the hypertrophy were congenital and primary the vomiting ought to commence soon after birth. As a matter of fact, this occurs only rarely, and in the large majority of cases the first vomiting is not noticed until the child is several weeks old. In our case the vomiting did not begin until the child was five or six months old. This explanation cannot account for all the cases, as Ballantyne, whose knowledge of fetal pathology is very extensive, has never seen an hypertrophied pylorus in the fetus.

Pfaundler advanced a theory about six years ago in which he denies the existence of any hypertrophy, and claims the entire symptom complex is produced by a spasm of the pylorus without any hypertrophy or stenosis. He based his conclusions on the result of postmortem studies on the stomach of infants. He frequently found that the pylorus was firmly contracted and presented all the appearances of pyloric stenosis. This condition he termed a functional *systolic* stomach in contradistinction to the relaxed or *diastolic* stomach. Undoubtedly, many cases of pylorospasm or functional spastic stenosis without hypertrophy exist and include many of those reported as pyloric stenosis which make a good recovery. That this does not explain the severe and fatal cases is shown in the reports of the 86 cases in which an autopsy was performed, where the pylorus was invariably found greatly thickened. Accurate measurements and histological sections were made in many of these cases. A functional spasm of the pylorus would relax under anesthesia, but this was not observed in any of the operated cases.

The most plausible view, and one held by many authors, is that the hypertrophy is secondary and a result of overaction on the part of the pylorus. Such a condition is sometimes found in adults as a result of a reflex spasm occurring in ulcus ventriculi or hyperacidity. In infancy the condition is more likely due to increased irritability of the nervous mechanism or hyperacidity,* and from the overaction of the pylorus the muscular fibres are increased and hypertrophied and the lumen diminished. Larkin showed in the microscopical examination of the pylorus in his case that there was not only a marked hypertrophy of the muscular fibres, but also an increase in the connective tissue between the muscular fibres. John Hunter pointed out many years ago that hypertrophy from repeated forcible contractions is common to all muscles, but is greater in involuntary than in voluntary muscles. This explanation coincides with the clinical history of most of all the cases where the vomiting begins several weeks after birth and grows progressively worse.

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* Examinations of one hundred and nineteen stomach contents made in the summer of 1903, showed a total acidity ranging from two to thirty-six and free hydrochloric acid in thirty-five cases. (Shaw.)

The chief symptom of this condition is the vomiting. It occurs from ten to fifteen minutes after taking the food. Diminishing the quantity of the food or changing its strength or character has no effect. Most of the reported cases have been in breast-fed babies. It resists treatment by lavage and medicinal remedies. A characteristic feature is that the vomited material is never tinged with bile. In the majority of cases no free hydrochloric acid was found, but Freund found it present in 3 of his cases. One of these contained free hydrochloric acid before the operation and none was detected after the operation. The abdomen in these cases is never distended as is seen so frequently in chronic indigestion, but is sunken and relaxed. This permits the peristaltic movements of the stomach to become visible. The stomach becomes greatly dilated, and its outlines can be clearly seen through the thin abdominal walls. In many cases a distinct enlargement of the pylorus can be detected on palpation.

Constipation invariably results from curtailment of the food and fluid supply to the intestines. The movements are small in amount and are hard and scybalous. The urine is also diminished in quantity. The uncontrollable, long-continued vomiting, without any symptoms of dyspepsia or indigestion, dilated stomach, emaciation, lax and sunken abdominal walls, obstinate constipation, and, perhaps, an enlarged pylorus, produce a symptom complex not difficult to recognize.

The prognosis is grave. Only 27 out of 104 cases treated medically recovered, which gives a mortality of 72 per cent. Seventeen out of the 39 cases treated surgically recovered, giving a mortality of 56 per cent. It would seem from the statistics that the surgical treatment gives more chance of recovery than purely medical treatment.

The medical treatment should be commenced as early as possible in order to control the spasm before the hypertrophy results. The food should be given at frequent intervals and the stomach washed out once or twice a day. Changes can be made in the composition of the food, but experiments along this line are not always beneficial. A breast-fed infant should not be entirely deprived of its natural nourishment, but a "two-milk" diet can be instituted with a few bottles of artificial food. As some cases of pylorospasm are due to hyperacidity, it might be well to follow the advice of Knöpfelmacher and administer small amounts of undiluted cow's milk. To this could be added citrate of soda as recommended by Poynton. Small doses of cocain before each bottle may give temporary help, but both the medicinal and the dietetic treatment will often prove unsatisfactory. High rectal irrigations of normal salt solution should be given daily in order to supply fluid to the tissues and to remove the hard constipated feces. Surgical treatment should be instituted when the diagnosis has been verified, so that the child will not be too debilitated and emaciated to withstand the shock.

That medical treatment of cases of pyloric stenosis in children has been unsatisfactory is shown by the relatively large number of autopsies upon cases of this description reported in the literature. Most pediatrists are agreed that in the majority of the cases of pyloric stenosis in the infant surgical treatment is indicated. The first operation for the relief of this condition was performed by Stern, June 3, 1897. In this case a gastroenterostomy was done and the patient died. The first successful operation for this condition, also a gastroenterostomy, was performed by Löbker, July 25, 1898. We have collected from the literature reports of forty operations upon infants with pyloric stenosis. Of these cases one was simply an exploratory incision, at which no attempt was made to relieve the condition, and the patient died. Another was a pylorectomy, and this patient also died. Of the remaining 38 cases 19 were gastroenterostomies, of which 7 recovered and 12 died, a mortality of 63 per cent.; 8 were pyloroplasties, of which 5 recovered and 3 died, a mortality of 38 per cent.; 11 were divulsions of the pylorus, the socalled "Loreta operation," of which 5 recovered and 6 died, a mortality of 55 per cent.

From the above, it appears that four different operations have been proposed and practised—pylorectomy, pyloroplasty, divulsion of the pylorus and gastroenterostomy. Pylorectomy can, without question, be excluded from the list of possible and practicable operations in such a condition; first, because there is no indication for the excision of the pylorus, and secondly, because in such weakened children an operation of this magnitude is almost certain to prove fatal. Of the three remaining methods of operation, the two which appear most rational and feasible are those of pyloroplasty and gastroenterostomy. Divulsion of the pylorus or, as it is more commonly known, "Loreta's operation," may offer temporary relief, but there is always a strong possibility of a recurrence of the stenosis and the danger attending this operation is quite as great as that of either pyloroplasty or gastroenterostomy. "Loreta's operation" upon the adult has not been of great value, and is today done only infrequently, and the same arguments advanced against its practicability in the adult would, we think, hold equally well in the infant.

Pyloroplasty, theoretically and practically, appears to have much in its favor, especially from the relative ease of its performance in many cases. There are, however, certain objections which can be raised against it, especially the possibility of the development of adhesions about the pylorus which might subsequently seriously interfere with its function. Furthermore, we believe that the technical difficulties as well as the dangers of this operation are quite as great as are those of gastroenterostomy. In our judgment there is more to be said in favor of gastroenterostomy than of any other operation yet proposed for the cure of this condition. In the first place, it relieves the pylorus of the irritation of the food and gastric juices, which appear in some instances to be an important factor in the production of the stenosis. This irritation removed, it is fair to assume that the lumen of the pylorus would become increased and more or less of a normal function allowed. We would emphasize especially the necessity of avoiding handling the stomach or intestines more than is absolutely necessary, because this undoubtedly contributes largely to the shock of the operation. To this end it would seem more advisable to employ a method of anterior gastroenterostomy, which can be easily and quickly performed with a very minimum of handling of the abdominal viscera, and practically as quickly as pyloroplasty. It is also advisable to administer nourishment by the mouth very soon after the operation, for these patients are always greatly reduced and in immediate need of nourishment. Experiment and practice have shown that this can be safely done without danger to the integrity of the anastomosis and with certain benefit to the patient.

In conclusion, we believe that the following generalizations can be made:

(1) That pyloric stenosis in the infant is of much more frequent occurrence than is commonly supposed.

(2) That medical treatment of these cases has proven uncertain and unsatisfactory.

(3) That surgical interference should be practised before the strength and vitality of the patients have become seriously reduced.

(4) That either pyloroplasty or anterior gastroenterostomy are the operations of choice.

LIST OF REPORTED CASES OF PYLORIC STENOSIS IN INFANTS.

MEDICAL CASES.

CASES IN WHICH AN AUTOPSY WAS MADE WHICH CONFIRMED THE DIAGNOSIS.

Author.	*No. of Cases.*	*Date.*	*References.*
Beardsley	1	1788	Archives of Pediatrics, 1903.
Williamson	1	1841	London and Edinburgh Monthly Journal of Medicine.
Davoski	1	1842	Casper's Wochenschrift f. d. ges. Heilkunde.
Peden	1	1889	Transactions Glasgow Pathological and Clinical Association, 1892.
Hirschsprung	2	1888	Jahrbuch für Kinderkrankheiten, 1888 and 1901.
Henschel	3	1891	Archiv. für Kinderkeilkunde.
Pitt	1	1892	Transactions Pathological Society of London.
Tilger	1	1893	Virchow's Archives.
Gran	4	1896	Jahrbuch für Kinderkrankheiten.
Finkelstein	4	1896 1897	Jahrbuch für Kinderkrankheiten. Berliner klinische Wochenschrift.
Schwyzer	2	1896–7	New Yorker med. Monatschrift.
Ashby	2	1897	Archives of Pediatrics.
De Brun Kop	1	1897	British Medical Journal.
Fenwick	2	1897	Disorders of Digestion, p. 315.
Stern	1	1890	Deutscher med. Wochenschrift.
Rolleston	1	1898	British Medical Journal.
Batten	1	1899	London Lancet.
Still	3	1899	Transactions Pathological Society of London.
Pritchard	1	1900	Archives of Pediatrics.
Fisher	1	1900	British Medical Journal.
Larkin	1	1901	Proceedings of the New York Pathological Society.
Schultze	1	1901	*Ibid.*
Thomson	8	1902	London Lancet.
Saunders	1	1902	Archives of Pediatrics.
Nordgren	2	1902	Eira. ref. Monatschrift für Kinderheilkunde.
Riviere	1	1902	London Lancet.
Selter	2	1902	Monatschrift für Kinderheilkunde.
Freund	3	1903	Mitt. aus den Grenz. der Med. u. Chir.
West	1	1903	Archives of Pediatrics.
Shaw	1	1903	Brooklyn Medical Journal.
Cautley	6	1904	British Journal for Children's Diseases.
Bernhein	1	1904	Korresp für Schweiz. Aerzte.
Schotten	1	1904	Sammlung Klinische Vorträge, Leipzig.
Cleveland	1	1904	British Medical Journal.
Fisher Neild	1	1904	Bristol Medico-Chirurgical Journal.
Dorning	1	1904	Archives of Pediatrics.
	66		

FATAL CASES IN WHICH NO AUTOPSY WAS REPORTED.

Henschel	2	1888	Jahrbuch für Kinderkrankheiten.
Finkelstein	3	1896	Jahrbuch für Kinderkrankheiten.
Stern	2	1898	Deutsche med. Wochenschrift.
Thomson	3	1902	London Lancet.
Salmon	1	1903	Monatschrift für Kinderheilkunde.
Cariot	1	1903	Gaz. des Mal. Infants.
	12		

CASES DIAGNOSED AS PYLORIC STENOSIS, BUT ENDING IN RECOVERY.

Author.	*No. of Cases.*	*Date.*	*References.*
Finkelstein	3	1896	Jahrbuch für Kinderkrankheiten.
Senator	1	1897	Berliner klin. Wochenschrift.
Still	1	1895	Transactions Pathological Society of London.
Coates	1	1900	ARCHIVES OF PEDIATRICS.
Knöpfelmacher	1	1901	Wiener klin. Wochenschrift.
Saunders	4	1902	ARCHIVES OF PEDIATRICS.
Burghard	2	1902	London Lancet.
Gardner	1	1903	London Lancet.
Koplik	3	1903	Diseases of Infancy and Childhood.
Schotten	3	1904	Sammlung Klinische Vorträge, Leipzig.
Variot	2	1903	Gaz. des Hôp.
Ibrahim	4	1903	Jahrbuch für Kinderheilkunde.
Conitzer	1	1904	Münchner med. Wochenschrift.
Stamm	2	1904	Münchner med. Wochenschrift.
	27		

SURGICAL CASES.

GASTROENTEROSTOMY.

Physician.	**Surgeon.**	**Age.**	**Died**	**Time After Operation.**	**Re-covered.**	**References.**
Stern		5 weeks	1	24 hours		Deutscher med. Wochenschrift, 1897.
Adler	Meyer		1			Medical Record, 1898.
Meltzer	"		1			Medical Record, 1898.
Abel	Kehr	8 "			1	Münchner med. Wochenschrift, 1899.
Thomson	Stiles	5 "	1	24 "		British Medical Journal, 1902, p. 1,874.
Monnier	Fritzsche				1	Dissert. Zurich, 1900.
	Löbker		1			Vers. deutsch. Gesell. f. Chir., 1900.
	"				1	Vers. deutsch. Gesell. f. Chir., 1900.
	Kehr				1	Vers. deutsch. Gesell. f. Chir., 1900.
	Trautenroth	5 "			1	Mitt. aus den Grenz. der Med. u. Chir., 1902
Mackay	Mackay	4 months	1	36 "		Intercolonial Medical Journal, 1903.
Ibrahim	Jordon		1			Münchner med. Wochenschrift, 1903.
"	"		1			Münchner med. Wochenschrift, 1903.
Freund	Mikuliz	9 weeks	1	5 months		Mitt. aus den Grenz. der Med. u. Chir., 1903
Greef	Bull		1	12 hours		ARCHIVES OF PEDIATRICS, 1903.
Gallant			1			ARCHIVES OF PEDIATRICS, 1903.
Schotten	Jackhs	35 days			1	Sammlung Klinische Vorträge, 1904.
"	Braun	45 "	1	20 "		Sammlung Klinische Vorträge, 1904.
Shaw	Elting	16 months			1	
			12		7	Mortality, 63 per cent.

SURGICAL CASES.

PYLORECTOMY.

Physician.	Surgeon.	Age.	Died	Time After Operation	Re-covered.	References.
	Stiles	8 weeks	1	10 hours		Brit. Med. Journal, 1902 Mortality, 100 per cent.

PYLOROPLASTY.

	Brissand	6 weeks			1	La Semaine Medicale, 1900.
Lange	Braun	9 "	1	20 hours		Münchner med. Wochenschrift, 1901.
Graanboom	MacGillavy	4 "	1	6 weeks		Monatschrift für Kinderheile, 1902.
Cautley	Dent	8 "	1	3 months		British Journal for Diseases of Children, 1903
"	"	6 "			1	British Journal for Diseases of Children, 1903
"	"	7 "			1	British Journal for Diseases of Children, 1903
"	"	5 "			1	British Journal for Diseases of Children, 1903
Guthrie	Murray				1	London Society for the Study of Diseases in Children, 1902.
			—		—	
			3		5	Mortality, 38 per cent.

DIVULSION OF THE PYLORUS (LORETA'S OPERATION).

Ritchie	Nicoll	6 weeks			1	Brit. Med. Journal, 1900
	Schmidt	8 "			1	Arch. f. Klin. Chir. Langenbach, 1901.
Still	Burghardt	8 "			1	Brit. Med. Journal, 1901
Thomson	Stiles	3½ "	1	48 hours		" " " 1902
"	"	4 "			1	" " " "
"	"	5 "	1	2 weeks		" " " "
"	"	11 "			1	" " " "
"	"	5 "	1	36 hours		" " " "
"	"	3 "	1	4 days		" " " "
Mackay	Mackay	6 "	1	12 hours		Intercolonial Medical Journal, 1903.
Lendon	Wigg	6 "	1			Australia Medical Gazette, 1902.
			—		—	
			6		5	Mortality, 55 per cent.

NOTE.—Küster opened the abdominal cavity in one of Schotten's cases, but did not perform a gastroenterostomy as intended, on account of the feeble condition of the child.

BRONCHIAL ASTHMA IN INFANTS AND CHILDREN, WITH AN ANALYSIS OF FORTY-THREE CASES.*

BY LINNÆUS E. LA FÉTRA, M.D.,

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Spasmodic or bronchial asthma is not a rarity, even in infants, and is fairly frequent in children, the number of cases met with increasing with the years of the patients. During the past two years there have come under my notice 43 cases of asthma in infants and in children under twelve years of age; 38 of these cases were under my care at the Vanderbilt Clinic, and the other 5 occurred in my own practice. As to the relative frequency of cases of asthma, I find that they make up slightly more than 1 per cent. of the whole number of patients. During the past twenty months there were 3,460 new patients under twelve years treated in the Children's Department of the Vanderbilt Clinic; of these thirty-eight had attacks of spasmodic dyspnea along with physical signs sufficiently characteristic to be classed as asthma. During the same period and among the same patients there were 851 cases of bronchitis, almost 25 per cent. Thus there would be, on the average, 25 cases of bronchitis—not including any form of pneumonia—to 1 case of asthma. In addition, it is of interest to note that there were during the same period 2 cases of emphysema and 13 cases of emphysema with bronchitis, which were entirely free from asthmatic attacks.

Age of Incidence.—Characteristic symptoms appeared at birth in 3 cases; from birth to three months in 2 cases; from three to six months in 3 cases; from six to twelve months in 3 cases. This makes a total of 11 cases occurring during the first year of life; of these 11, 8 were females and 3 males. During the second year of life there occurred 8 cases, 6 males and 2 females; from two to five years, there were 9 cases, 8 males and 1 female; from five to twelve years, 15 cases, 10 males and 5 females. No patients over twelve years of age were treated. It will be noticed that only during the first year was there a preponderance of females over males; after that the males exceed the females, and in the period from five to twelve years the ordinary ratio of adult asthma is attained, there being a marked preponderance of the males. In the whole number of 43 cases, there were 27 males and 16 females. During the first year of life it may be that the smaller size and weaker resistance of the females has something to do with their greater susceptibility, either to asthma itself, or to the bronchitis which so often precedes the asthmatic attacks.

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* Read before the Sixteenth Annual Meeting of the American Pediatric Society, Detroit, Mich., June 1, 1904.

Hyde Salter,* in his classical monograph, among 225 patients of all ages, gives 11 cases as having begun during the first year of life, his youngest patient having been fourteen days old at the time of the first asthmatic seizure. From one to ten years Salter records 60 cases, and from ten to twenty, 30 cases. Goodhart,† among 123 cases of all ages records 50 cases under ten years old, 31 males and 19 females; his youngest patient was three and one-half years old.

Length of time the asthma has persisted.—At the time the patients came under treatment the disease had existed less than three months in 9 cases; from three to six months in 5 cases; from six to twelve months in 4 cases; from one to three years in 9 cases; from three to six years in 5 cases; over six years in 3 cases. The most persistent case was one that had existed for nine and one-half years in a boy eleven years old. The most distressing one occurred in a colored girl of thirteen years, who had been unable to sleep lying on her back for seven years. If the ages of the patients at the time they came under treatment are combined, the sum is 282 years; if the periods of symptoms are combined, the sum is eighty-seven years; thus, the average duration of asthma in these 43 patients was almost one-third of their lives.

Race.—The nationality of the parents or the birthplace of the patient was given as the United States in 16 cases; German, 8; Swedish, 2; Dutch, 1; Irish, 6; United States, colored, 2; Hebrew, 9 (of these 3 were Germans, 1 an Austrian and 5 were Russians). There was not a single Italian and only two negroes; this was remarkable, since one would have expected rachitis to be a very important predisposing factor, as it is in cases of spasmodic croup and bronchitis.

Family History.—The family history was asthmatic or rheumatic or tuberculous or neurotic in many cases, but the answers were not sufficiently reliable to be suitable for statistics. Authorities are agreed, however, that the tendency to asthma is transmitted in many instances by asthmatic ancestors—in 16 per cent. of Berkart's cases.

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* The Pathology and Treatment of Asthma.

† Allbutt's System.

Abnormalities of development were present in several cases, especially where the symptoms began at birth or very early in the first year. There was pulmonary atelectasis in 2 cases, an enlarged thymus gland in 2 cases, pigeon breast in 1 case; two of the patients were prematurely born, and one was of the mongolian type of idiocy.

The relation to adenoids will be spoken of later.

Previous Personal History.—Twenty patients had previously suffered from bronchitis, several of these from a bronchitis that was a complication or sequel of measles or whooping-cough. There had been bronchopneumonia in 7 cases, one of these part of a grip infection; so that altogether 27 out of 43 patients had had some respiratory inflammation preceding the attacks of asthma, Rickets were present, but nearly always in mild form, in 8 cases. Only one of the patients had suffered from chorea, and none from migraine or epilepsy.

Cause of the attacks.—Immediately preceding the attacks, or coincident with them, and therefore assigned by the parents as a causative factor, there was bronchitis in 14 cases; bronchopneumonia in 1 case; pneumonia in 2 cases; gastric indigestion, a drive against a cold wind, a fall down stairs and an attack of malaria, each in 1 case. Thus, in more than half the cases no cause was suggested. Each of the above circumstances has been known to cause attacks. In India, according to Goodhart, malaria is one of the usual causes.

Periodicity and Severity of the Attacks.—The attacks were said to occur daily, or with no stated intermission, in 8 cases; in the others the periods varied from two weeks to "every winter" or "every summer." The attacks were worse by day in only 2 cases; all the rest were worst at night; or, in the case of three infants, whenever they were lying on the back; one of these patients had a large thymus which might explain the access of the paroxysm when supine. Three cases were distinctly worse in hot weather; the others were generally worse in winter.

Complications.—Emphysema alone was associated with asthma in the cases of 6 boys and 4 girls; 5 of these patients had the square or barrel chest, their ages being two years, five years, five years, nine years and twelve years, respectively. The youngest patient of this group, a baby boy of two years, had had attacks noted as constant for three months following a bronchitis; along with the emphysema there was a tendency to urticaria.

Emphysema with bronchitis was present in 2 girls and 3 boys. Only one of these patients had a barrel chest; he was a little boy three years old who had had asthmatic attacks for over a year following bronchitis; large adenoids were also present. The shape of his chest and its movements were typically emphysematous.

Abnormalities of the nasopharynx were associated as follows: Congenitally high-arched palate (without adenoids) in 1 case; deviated septum in 2 cases; adenoids or adenoids and large tonsils in 20 cases. There was a lingual tonsil in 1 case. It will be seen that 47 per cent., or nearly half the cases, suffered from adenoid growths. The presence of adenoids in so large a proportion of asthma cases is very significant, for probably not more than 30 per cent. of New York dispensary children have adenoids sufficient to cause symptoms.

Symptomatology.—During the attacks, whether separated by long periods, or occurring every few hours, there is the same wheezing, whistling breathing, and dypsnea, all the accessory muscles of respiration being called into requisition. The patients are usually relieved by sitting up or by having the shoulders raised and the elbows braced so as to give better support to the muscles passing from the head, arms and shoulders to the chest. There may be cyanosis. In infants and young children there is, at each inspiration, sinking in of the suprasternal and supraclavicular fossæ and of the rib insertions of the diaphragm below; while in older children or in protracted cases the whole chest moves upward with even less expansion. Toward the end of a paroxysm the chest may become temporarily barrel-shaped; but after the attack has passed the emphysema disappears and the chest resumes its normal form. Repeated or prolonged attacks produce a permanent deformity, as has been noted in the above analysis. The respiratory rate in infants may be anywhere from 44 to 80 per minute, and with the alæ nasi dilating beginning bronchopneumonia is suggested.

Palpation reveals bronchial fremitus in most cases.

Percussion early in the paroxysm elicits a note that is somewhat dull; toward the end of the attack the note may be hyperresonant.

Auscultation in the uncomplicated cases reveals dry squeaking or whistling, along with some musical or sonorous râles, both during inspiration and expiration; the inspiratory sounds are the louder, while the expiratory sounds last longer. These sibilant and sonorous râles may be simultaneously heard all over the chest or at different parts in succession, coming and going during the attack. Often the pandemonium of the chest can be heard at a distance of 20 or 30 feet, even in an infant. Notwithstanding all this adventitious noise the breath sounds themselves are actually feeble, very little air entering the chest. Toward the end of an attack, and in cases complicated by bronchitis, there are subcrepitant and mucous râles.

Cough, if present, is short and dry, except toward the end of an attack, when it is looser. In older children there is some expectoration. I have never examined the sputa for the characteristic crystals and spirals.

Spontaneously, or after the administration of some sedative, the respiration becomes less and less noisy, and less rapid. The sibilant râles are replaced by larger sonorous and mucous râles, and soon only a few large moist râles and sonorous breathing remain to signalize the storm that has past. The hyperresonant note disappears and the chest resumes its usual shape and normal respiratory rhythm. The temperature in uncomplicated cases is rarely above normal, except in infants, where it may rise to 100°F. and 101°F.

Eosinophilia.—The leukocytes are usually, but not always, increased, as in bronchitis, but a differential count of the white cells shows what does not occur in bronchitis, a constant and usually marked increase in the number of poly-eosinophiles. The cases examined for me at the Vanderbilt Clinic by Dr. Ira Wile, the clinical pathologist, showed an eosinophilia from 6 to 18 per cent. Cabot reports in adults a mean eosinophilia of 7 per cent. in a range from 0 to 53.6 per cent. This eosinophilia is greatest for any given patient at the height of the attack; it disappears in the intervals, but in the subacute cases a low grade eosinophilia persists. Thus the differential count of the leukocytes is of diagnostic and prognostic value, so far as the attack is concerned.

Diagnosis.—Asthma in infants may simulate bronchopneumonia or a fine bronchitis in their early stages when there is little or no secretion, rapid labored breathing and feeble respiratory murmur, but the low temperature, and the dry whistling râles that flit from one part of the chest to another will suggest the real diagnosis. If such symptoms follow or accompany gastric indigestion, urticaria or attacks of sneezing, asthma is all the more probable. The existence of eosinophilia, together with the speedy recovery from the attack, and later recurrences will confirm the diagnosis.

If one keeps in mind Holt's classification of the symptoms into four groups, the cases are less apt to be mistaken. In my series of cases, however, there was not one of clear-cut hay asthma, though three of the patients always began by sneezing.

Pathology.—The patient does not die of asthma itself; therefore its pathology is not known. Exception must be made in the cases of very young infants, in whom the disease may prove fatal, though uncomplicated.

Pathogenesis.—All clinicians are agreed that the peculiar type of breathing is induced by a narrowing of the lumen of the bronchial tubes. How this stenosis is brought about has given rise to warm discussion. At present only two theories seem worthy of consideration, since the cases can all be explained on one or the other hypothesis.

I. The first and generally accepted theory is that asthma is due to *spasmodic contraction of the smooth muscle fibres of the smaller and medium sized bronchial tubes;* this contraction may affect successive parts at different times, or all of the bronchial tubes at the same time, the tendency being for relaxation in one part while another part is in contraction. For a long time there was no experimental support of Hyde Salter's masterly championship of this theory; but in 1891 Lazarus* showed that electrical stimulation of the nasal mucous membrane will produce a distinct increase in intrabronchial pressure by reflex contraction of the bronchioles through the efferent fibres of the vagi.

Within the last two years Brodie and Dixon,† by a very interesting series of experiments, demonstrated the truth of this theory. They recorded the volume of air entering and leaving the lung at each respiratory act by using an oncometer upon an isolated lobe of dog's lung. Aeration was kept up artificially and then electricity and various drugs were used to affect the calibre of the bronchi. Stimulation of the vagus caused marked diminution of the volume of air entering and leaving the lung, owing to contraction of the bronchial muscles. They found, too, that the vagus contains also broncho-dilator fibres. They failed to produce any reflex constriction by excitation of a cutaneous nerve, or by excitation of the stomach and intestines. The most important and powerful constrictor reflex was obtained by stimulation of the nasal mucous membrane, particularly the upper and posterior part of the nasal septum. Of drugs, muscarin, pilocarpin, physostigmin, digitalin and carbon dioxid gas produce marked bronchial constriction. Solutions of Charcot-Leyden crystals intravenously injected proved quite harmless. Atropin, hyoscin and hyoscyamin paralyze the vagus endings and cause broncho-dilatation if constriction be previously present. Lobelia causes marked, and morphia only slight, dilatation.

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* *Deutsche med. Woch.*, 1891, Vol. xvii., p. 852.

† Brodie and Dixon Transactions Pathological Society, London, Vol. liv., 1903, p. 17.

Another argument they advance for bronchial spasm as the cause of the stenosis is that the sudden onset and rapid disappearance of the attack are exactly similar to the common course of prolonged contraction of involuntary muscle. Moreover, a dose of muscarin can induce a typical attack of asthma in an animal; further, such an attack can be cut short almost instantaneously by injection of atropin—an impossibility if the stenosis were due to turgescence of the mucous membrane or to an exudation. Again, the relief patients experience from administration of atropin, lobelia and morphin, which are broncho-dilators, points to same conclusion.

As to mode of production of the bronchial constriction in asthma, they believe it to be due to irritation of the nucleus of the tenth pair of cranial nerves in the medulla by reflex stimulation—as from the stomach after an indigestible meal or from the nasal mucous membrane after irritation by pollen, inflammation, etc. Sneezing cases, they argue, are the best ones for cure by operations on the nasal mucous membrane.

Brodie and Dixon conclude that the reflex contraction of the bronchi is protective, a mode of defence to the organism, to prevent the entrance of irritating substances, whether particulate or molecular, into the respiratory tract. In asthmatics there is an exaggeration of this normal protective reflex.

Undoubtedly nearly all the cases in infants and a majority of the adult cases of asthma are explained by the above theory of contraction of the bronchial muscles.

II. The second theory is that the narrowing of the bronchial lumen is due to *vasomotor tumefaction, turgescence or paresis*—a sort of angioneurotic edema or urticaria of the bronchial mucous membrane. So far as I know this theory is supported not by experimental evidence, but by analogy and by the clinical results of certain forms of treatment. Comparison is made with the turgid state of the nasal mucous membrane brought about by a draught, by irritating vapors, by powdered ipecac, or by pollen in a hay fever subject, and the assumption is that the same sort of vaso motor swelling takes place in the bronchial mucous membrane. The association of asthma with urticaria and the analogies of the two conditions have been emphasized by the late Dr. F. A. Packard,* who reported 5 cases where asthma was replaced by urticaria. Several cases are reported by Crouslé,† in one of which the asthma that followed eating mussels was relieved at once when urticaria appeared on the skin; in another case, a causeless coryza was apparently connected with an outbreak of hives, and the urticaria was substituted by an attack of asthma.

In two of my series of cases the asthma and the urticaria seemed to replace each other. In another patient attacks of eczema seemed to replace the asthma, and *vice versa.*

Again, the results of the injection in asthmatics of the vasoconstrictor principle of the suprarenal gland, as reported by Bullowa and Kaplan, would indicate that in some cases, at least, vasomotor paresis or turgescence is a cause of the narrowed bronchial lumen.

Moreover, in four of my series the use of adrenalin or suprarenal extract, either internally or in the nose, was followed so quickly by marked relief of the symptoms that it would seem fair to assume vasomotor paresis in those cases. The wide use of adrenal sprays in hay asthma is also in favor of this theory.

Against this interpretation of the local use of a vaso constrictor it may well be urged that by closing up the vessels of the nasal mucosa the particulate exciting cause is prevented from acting on the nasal branches of the trifacial nerve, and so the reflex spasm is not produced. No such objection, however, can be made in case of the hypodermatic use of adrenalin.

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* Urticaria of the mucous membranes, especially in connection with asthma. Transactions American Pediatric Society, Vol. xi., p. 92.

† Thèse de Paris, 1889.

So far as this second theory is concerned, I think we can safely say that some of the cases of bronchial asthma are produced by vasomotor turgescence.

Etiology.—Patients that suffer from asthma have a peculiar susceptibility to irritations of the upper respiratory tract and to all reflexes physiologically connected with the pneumogastric nerve, and probably the thoracic sympathetic nerves. This susceptibility is analogous to the idiosyncrasy possessed by some people to strawberries, shell-fish and woolen clothing—that is to say, it is an abnormal response to a normal stimulus; it is an exaggeration of the activity of a normal protective reflex. We see it acting normally where there is contraction of the bronchi to prevent the entrance of irritating vapors, and it is present, also, in certain stages of bronchitis.

The constitution may be asthmatic by reason of asthmatic, gouty or neurotic inheritance, or because of frequent attacks of bronchial and pulmonary inflammations, especially those complicating measles and whooping-cough. Eighty per cent. of Salter's cases followed pertussis. These inflammations lower the tone of the general health and heighten the irritability of the nerves involved. Or, the susceptibility may be strictly local and due to adenoids, polypi, hypertrophied turbinated bones, elongated uvula, lingual tonsil, enlarged bronchial lymph nodes or a persistent thymus gland.

Exciting causes of the attack, aside from bronchitis or a "cold," are difficult to discover in infants and children. In contrast with adults, only one or two seemed to be affected by dust; 2 cases were worse in summer and may have been due to vegetation; in 3 cases the attacks were preceded by sneezing, so that these may have been also hay-fever cases. Sudden change of the weather from hot to cold, or *vice versa,* seemed to have more effect than damp weather, unless there was bronchitis. Warm damp weather seemed favorable in one instance.

In view of Prof. Dunbar's experiments with the toxins and antitoxins of hay fever, and in view, also, of the eosinophilia, which occurs likewise in cases of trichinæ, tape worm and echinococcus infection, it is rational to believe that in all cases some toxin has been manufactured in the body or absorbed from the respiratory tract.

Treatment.—With full knowledge of the predisposing and usual exciting causes, and of the two methods by which stenosis of the bronchi is produced, a careful study of the patient's history and physical signs will suggest in nearly every case the rational and successful line of treatment. Predisposing and exciting causes should be removed wherever that is possible; if they cannot be removed they can frequently be modified; in the case of unfavorable climatic, aerial or locality conditions, the patient should be removed from the cause. The attacks themselves are to be treated on the basis of their pathogenesis; subsequently, the patient's general condition is to be toned up by hygienic and dietetic measures, and the respiratory neuromuscular mechanism rendered less sensitive by sedatives at first, but later by alteratives and nerve tonics.

Prophylaxis.—In the case of infants and children who have never had an attack, but whose ancestry is asthmatic, as well as in the case of asthma subjects, prophylaxis may do much to diminish the probability of subsequent attacks. The chief predisposing causes are bronchitis and pharyngeal adenoids. Attacks of nasopharyngitis and bronchitis are never to be lightly regarded in infants, and active treatment should be carried on in each case to shorten the disease and so prevent the respiratory mucous membrane from becoming over-sensitive; it is particularly important not to let the colds "hang on" in those who have an asthmatic, gouty or rheumatic heredity, nor to let whooping-cough and measles be complicated by a prolonged bronchitis. The prevention of taking cold involves the whole hygiene of the child; particularly seeing that the clothing is not so heavy as to keep the child in a constant bath of perspiration, and attending to the matters of daily cold sponging or bathing, daily exercise out of doors, and proper airing of the nursery by day and by night. Parents are apt to make hot-house plants of such children—and all because the physician has insisted, rightly enough, that the child should not be allowed to catch cold.

Removal of adenoids and enlarged tonsils greatly diminishes the liability to asthmatic attacks. The operation may be followed in a small percentage of cases immediately; in the majority of cases after a few weeks by a cessation of the attacks. In my series of cases, 8 gave indisputable evidence of the value of the operation; but in several others, older cases, there was no perceptible improvement.

Hypertrophic rhinitis, polypi, lingual tonsil, or deviated septum should receive the proper treatment, severer measures being used if cleansing and the application of adrenalin does not produce visible improvement. A regular toilet of the nose, as practised by Jacobi, should be established, an alkaline saline solution being used night and morning. For enlarged bronchial lymph nodes or persistent thymus gland, arsenic and the syrup of iodid of iron should be given.

The removal of the exciting causes, while of the first importance, is often impossible because they are not recognized. Where the attacks accompany gastric indigestion or urticaria, the offending articles of diet can be excluded, or the whole dietetic *régime* modified. Where the attacks are due to vegetation, certain odors, animal emanations or dust, the cause and the patient should, of course, be put apart. Cats and horses have proved exciting causes, and should be eliminated in every case. A high dry climate in winter, or the woods in summer, may be the proper environment for those who have attacks in the city. Usually, however, the city is a good place for hay-fever patients.

The removal of the local cause frequently does not eradicate the habit when this has become established, and then other measures, hygienic and medicinal, are required.

Treatment of the Constitution.—It is of extreme importance not to relax treatment until recurrences of the attacks are prevented, inasmuch as emphysema, chronic bronchitis and permanent changes in the chest occur in protracted cases or in those with frequent attacks. All the measures mentioned under *prophylaxis* should be employed, and certain additional drug treatment is desirable.

To keep the respiratory membranes well toned up during the winter, cod-liver oil, in connection or in alternation with tonic doses of quinin, is of great value. In place of quinin, the combination of guaiacol and quinin, known as guaiaquin, in doses of two grains three times daily, has been employed with advantage. Arsenic also may be used in place of or in alternation with the quinin preparations, both for its effect on the blood and on the nerves of the respiratory mucous membranes, diminishing their excitability by raising their tone.

For cases of long standing nothing takes the place of the iodids. The iodid of sodium is well borne by children when given with liquid peptonoids, trophonin or essence of pepsin. It is probable that the employment of Dunbar's pollantin, and of other hay fever antitoxins will prove beneficial in those patients who are hay asthma subjects.

Rheumatic children and those subject to eczema or urticaria should have a carefully regulated diet, and their liver should be kept active by the use of phosphate or salicylate of soda, a series of calomel being administered once a month or oftener.

Treatment of the Attack.—The great majority of the attacks are due to spasm of the bronchial muscles. Accordingly, measures are used to relax the spasm. Of first importance are those that can be administered by inhalation. In infants, where the attacks closely resemble capillary bronchitis, the effect of steam impregnated with creosote (20 drops of creosote being poured into a pint of water boiling in a croup kettle) is very satisfactory in relaxing the spasm. In older children, the nitrate papers, with or without stramonium, are efficient. The proprietary asthma cures do very well, consisting of nitre and stramonium leaves for the most part; but in infants the fumes are at times irritating. Where the spasm is intense and the dyspnea dangerous, chloroform may be needed to permit air to enter the lungs. I have had no experience with amyl nitrite and pyridin; they are said by some observers to be good, though pyridin is uncertain in its action.

As soon as the infant can swallow, a dose of tartar emetic, 1-100 grain, with ipecac 1-20, should be given, along with 1-100 or 1-50 grain nitroglycerin; this dose is repeated every half hour for two or three times, or until relief is procured. This plan is particularly good when the case resembles a bronchitis of the finer tubes.

Another method which I have used with great benefit is to give atropin in doses of 1-2000 grains every two hours until the face flushes; the effect of the atropin seems to come in about two or three hours. Infants vary in their susceptibility to the flushing, but usually a baby of two years can take two or three of the above doses before the face gets red. At times I have found the paroxysm pass off and the sibilant râles disappear within an hour after the first dose. After the attack has passed off the atropin is given twice or three times a day for several days.

If the attack is one accompanied by gastric indigestion, the stomach should be emptied at once, preferably by a dose of syrup of ipecac.

For long standing cases and those in older children, the old emphysema mixture has been used for years with success. The composition is as follows:

℞—Potassii iodidi		grs. xx
Morphinæ sulphatis		gr. $\frac{1}{3}$
Tinct. belladonnæ		♏xx
Spts. ætheris comp.		fʒiii
Aquæ	qs. ad	f℥ii

It is given in dram doses every three or four hours, and is especially of value when there is complicating emphysema or bronchitis.

On the theory that the attack is due to vasomotor paresis or turgescence, vaso constrictors should be used. I have never given adrenalin chlorid hypodermatically to children; the dose for adults is from 3 to 10 minims of the 1-1000 solution deeply injected. I have used suprarenal extract solution and the adrenalin chlorid solution for instillation into the nose in a few cases with marked benefit. The instillation into the nose may not act by vaso constriction of the bronchial blood vessels; but its effect has been beneficial in several cases.

One patient, a colored girl thirteen years old, had had asthma for seven years; she has constant asthma emphysema with a typical barrel chest, and has been unable to sleep lying down for years, and is shown by Dr. Holt to his classes each year. This spring she was treated by instillation of ten drops of suprarenal solution into the nose every two hours for six doses each day. In dispensary practice the adrenalin chlorid solution is too expensive, so this solution of the powdered extract of the gland can be used instead. The first night, after this treatment was begun she slept all night lying down and the second day afterwards the sibilant râles had almost entirely disappeared; the girl said she never had been so well. It is too early to call the case a cure; but the improvement is remarkable.

Prognosis.—Except in very young infants and in those with enlarged thymus gland the outlook for asthma patients is good in inverse proportion to the time the symptoms have existed and to the frequency of the attacks. In infants the elasticity of the lung and its recuperative power are great; bad nerve habits are more readily overcome. If there is a removable predisposing cause, or if the exciting causes can be removed, there is little doubt of a cure.

In older children, where no cause can be discovered, change of residence to a place where they do not have asthma for a year or two will usually cure them of the tendency.

Altogether the prognosis is favorable if the cases can be put upon proper treatment before emphysema and the barrel chest have developed.

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DISCUSSION.

Dr. Jennings.—At the meeting of the Society held in Boston, I reported a case of autointoxication in which the chief clinical manifestation was attacks of coma, one in particular being severe and prolonged. The clinical picture has changed during the last year and now, instead of the coma, the patient has attacks of asthma. These attacks of asthma have apparently replaced the other clinical phenomena.

This child came into my office a short time before for an examination of her nasal chambers. To facilitate examination I sprayed the nasal passages with a solution of adrenalin and this set up a severe attack of asthma. During the past two years her attacks have been relieved by heroin in $^1/_{50}$ grain doses administered every half hour until four to six doses have been taken.

Dr. Holt.—These little patients, six or eight years old, seen in private practice, are pitiable cases. It seems to me that for a radical cure of the asthma the one important thing is a change of climate, and this is the only thing that can really be relied upon. I have always felt that any child who continued to have asthma until ten or twelve years old would probably suffer for life; therefore, when I meet with a severe type in younger children I advise that they be taken to a climate where attacks do not occur; although such a place cannot always be found. In many of these patients the general nutrition is at fault and they should be given cod-liver oil, particularly in the winter and spring, and they should be kept in the open air. Most children who have asthma in winter and spring are sufferers from repeated attacks of bronchitis, the beginning often being whooping-cough or measles. I believe that general practitioners and specialists, also, should take these cases of asthma more seriously, and insist upon the parents doing all possible for the small patients, and before the asthma became an established condition.

Dr. Crandall.—All know how hopeless and how very serious these cases are when once they get a headway. If anything is to be done at all it should be done early, and particularly after measles. I presume that more of these cases are seen after such epidemics. I recall one family in which the mother was asthmatic and, later, the children showed a tendency to the same trouble. After measles the children were sent south as soon as possible.

Dr. Northrup.—I am surprised regarding the frequent occurrence of asthma, and I would protest against people talking about "outgrowing" the asthma.

Dr. Caillé.—When I was in Hamburg last year, I was the guest of Dr. Dunbar, who showed me what he could do with the pollen poison and its antitoxin. He was himself a fever patient. He took the pollen poison in solution and instilled it into the eyes of us both. My own eyes were not affected, but Dr. Dunbar's became blood red within fifteen minutes. He then took the antitoxin (pollantin) and placed it in his eye; within half an hour all evidences of vasomotor disturbances had disappeared. It was a striking experience and showed the efficacy of pollantin.

Formaldehyd in the Treatment of Acute Tonsilitis.—A. C. Jordan (*Bull. Gen. de Therap.*, Vol. CXIV., 1903, p. 391) has obtained good results from the application of a 1 per cent. to 4 per cent. solution of formaldehyd in glycerin in the treatment of aphthous stomatitis, diphtheric and scarlatinal sore throat, and especially in acute tonsilitis. The application should be made from the beginning of the affection. This solution causes some pain in the throat for several hours after its application, but it is not unbearable. After each treatment the patient should not eat or drink for a half hour or an hour, in order to favor the antiseptic action of the formaldehyd on the parts. A simple gargle of potassium chlorate may be used to complete the cure.—*American Medicine.*

Fluoroform in Pertussis. — Stepp (*Prager. Med. Wochenschr.*, March and April, 1903) reports in detail 14 cases of whooping-cough treated with fluoroform. The ages of his patients ranged from 1 month to 7 years. The duration of the disease from the beginning of his treatment varied from 11 to 28 days. In all of his cases the administration of fluoroform was followed almost immediately by a lessening of symptoms. Hence the author believes this preparation has a specific influence upon whooping-cough. The exact mode of its action is not known. Fluoroform is tasteless, odorless, and not poisonous. Two of the author's patients, aged 2 and 3 months respectively, took in a period of three and one-half to four weeks 1,400 to 1,600 cc. of fluoroform with no ill effects. The dose is 1 to 2 teaspoonfuls hourly.—*American Medicine.*

PERICARDITIS (GONORRHEAL).*

BY F. HUBER, M.D.,
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The old view that gonorrhea is simply a local disease has been discarded for many years. General infection of gonorrheal origin and the various metastatic processes, which may arise in consequence, have been carefully investigated during the past decade. The joints, bones, tendons and bursae, it is well known, are frequently implicated. Even the nervous system does not escape the inroads of the germ. In fact, all the different structures of the body may be involved. In some instances the lesions are due to action of the specific microorganism, in others the toxins cause the trouble. Now and then both may act.

A closer study of this part of the subject, as shown by a review of the literature, is attended with many difficulties. From the nature of the case experiments upon man cannot be carried out and the lower animals seem to be immune. Gonococci may reach distant organs or structures in two ways. (*a*) Through the circulation. (*b*) By means of the lymphatics. Up to the present it has not always been possible to assert positively that certain lesions are due to or can be directly attributed to the action of the toxins or to the germs themselves.

In general it is believed that arthritic processes, endo-, myo- and pericardial affections, pleurisy, periostitis and phlebitis are caused by the gonococcus, the majority of the others by the toxins. It should not be forgotten, however, that in many instances a mixed infection has occurred.

Lesions of the deeper portion of the genital tract, a lowered condition of the constitution, cachetic states, serious constitutional disturbances and meddlesome instrumental interferences are some of the more important factors favoring general infection. Not only is there a difference in the virulence of the microorganism, but there is also a variation in the susceptibility of the subject. When the anterior parts are involved, the toxic products are readily washed away. In the posterior urethra and deeper structures on the contrary, the crypts and glands unfortunately permit the offending secretions to remain in the recesses. Clinically, it has long been recognized that untoward results are less apt to follow in cases in which the anterior urethra only is involved. General infections resulting from gonorrheal affections of the vulvovaginal tract, rectum or conjunctival mucous membrane, are common. Kimball, however, reports a series of cases in infants, in whom *no local lesions* could be found to explain the mode of entrance of the organism. The suggestion is made that from a stomatitis due to the gonococcus such a systemic infection may arise.

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* Read by title before the American Pediatric Society, Detroit, Mich., May 31, 1904.

Elevations of the temperature, more or less malaise, loss of appetite, etc., are not uncommonly observed at the outset. These symptoms constitute the early manifestations of a systemic infection.

The skin does not escape—erythema, urticaria, erythema nodosum, hemorrhages, bullous erythema and hyperkeratosis have been reported. Muscles and connective tissue at times show the effects of the malign influences of the microorganism.

The invasion of lymphatics, inguinal adenitis, terminating in resolution or suppuration, is an old story. The danger of an extension into the urethra, bladder, ureters and even to the kidneys is well known. Quite recently it has been shown that toxic effects involving the kidneys may occur as a metastatic process without upward extension or a direct involvement of the bladder or ureters. It is generally conceded that in females of tender years, and even in infants, the uterus, tubes, ovaries and peritoneum (local or general) may be implicated.

Septic and pyemic processes occur with more or less frequency in childhood. Ophthalmia from direct infection by the fingers, is unfortunately quite common. Abscesses in the subcutaneous tissues and muscles have been reported within the last few years. Involvement of one or more joints, tendons, etc., may occur in infants within the first few weeks of life. Serous membranes, particularly the endocardium, may be implicated. The process is met with in all grades from the simple to the ulcerative variety.

The writer is indebted to the late Dr. J. Berenson for the opportunity of studying the following interesting case:

Jenny A., three and one-half years old, born in New York of Roumanian parentage, enjoyed excellent health until the present illness. She was taken acutely ill with swollen ankle, attributed by the mother to infection from a scratch with a piece of tin. Upon closer examination the accident was found to have occurred in the opposite limb. Temperature 104°F., pulse accelerated. The joint became more swollen and tender without any particular redness. The opposite knee became painful, and the patient sweat considerably. On the third day, pericardial friction sounds, with a loud systolic murmur over the precordial region, were detected.

As the general surroundings were bad the child was sent to the hospital June 3d.

On Admission.—Stout, well-nourished child, color good. Lips dry, tongue moderately coated. Slight general redness of throat. Abdomen normal: spleen not palpable. There was slight edema of the feet. *Heart.*—Apex, impulse well defined in fifth space in nipple line three inches from mid-sternum. Cardiac dullness begins to right of sternum: action regular and rapid. To left of sternum and at apex a loud blowing systolic murmur is heard. Over the precordial region numerous superficial to and fro friction sounds are audible, intensified by inspiration and heard in expiration as well, though less distinctly. Second pulmonary sound somewhat accentuated.

Temperature 102°F., pulse 133, irregular in force and frequency, respiration 38. The bowels were constipated. No history of sore throat. Difficulty in breathing and severe precordial pains were the principal symptoms complained of. Urine, amber, no sediment; specific gravity, 1.030; albumin, faint trace. There was an excessive amount of indican; leukocytes from vulvovaginal catarrh.

Under the impression that the trouble was of a rheumatic nature, antirheumatic measures were resorted to, without any material benefit. Ice bags were placed over the heart. Fluid diet ordered. From June 5th to 8th vomiting occurred, the pulse became irregular and somewhat slower. The vomiting was incessant and not readily controlled; nutrient enema were ordered. From eighth day on the stomach was under control. Child apathetic. Soon after this the child gradually improved. An attack of urticaria occurred about the 18th day, which we could not attribute to the diet, as milk and cereal decoctions only were allowed. From the nineteenth day on the pulse became slower. The vaginal discharge showing gonococci became more profuse. Local treatment could not be carried out because of the struggles and excited conditions of the patient. General supporting treatment only was possible.

The temperature 102°F. on admission gradually dropped to 98°F. on the third day, then ran between 98°F. and 99°F. for three days. For the next few days it hovered in the neighborhood of 100°F. On the thirteenth day it rose to 102°F., followed by a rather abrupt fall to 98°F., and continued to make short excursions between 98°F. and 100°F. for the next two weeks.

The pulse rate was high in the beginning; in a short time it came down and ranged from 92 to 100 for some time. In the third week it became slower and was often intermittent in character, varying from 60 to 84 at different times. In the early part of July it ranged between 80 and 100 per minute.

The pericardial friction sounds continued for several weeks. The murmur was irregular in its distribution depending upon the heart's action. No signs of effusion could be detected by percussion. About the beginning of July the murmur was very faint. At the time of discharge the sounds were normal. Heart's action good, no hypertrophy or abnormality was appreciated. At a subsequent examination, several months later, there were no evidences of any change in the heart's action. The sounds were normal and the physical condition excellent.

The first diagnosis of acute rheumatism was questioned early in the course of the disease. The prominent swelling of the joint, the subsequent progress of the case, the marked evidence of a low grade of sepsis, the projectile vomiting, the variable character of the murmur and its complete disappearance without appreciable change in the valves, lead to a probable diagnosis of infection due to the gonococcus—fortunately of a mild and not ulcerative type, confined to the pericardium and myocardium.

The gonorrheal infection may affect the endo-, myo- and pericardial structures. These affections are frequently combined. The endocardium is most often involved. The inflammation may occur as a simple process or show itself as an ulcerative type, with fatal termination. Myocarditis due to the specific cause under consideration is rare; it is usually secondary to the endocarditis.

Pericarditis, though somewhat frequent, is rarely the only manifestation. The affection is generally benign, does not give rise to much discomfort and may run its course without any manifest symptoms.

Objectively, it may occur as a dry form or may be attended with exudation. In the first variety the pericardial friction sounds are distinctly heard, in the other case dullness exists with feeble heart sounds. The effusion is generally serous in character, at times though it may be hemorrhagic. Beurmann has reported a case in which pus was formed. Other instances are mentioned in which several serous surfaces were involved (meninges, pleura, etc.).

A CASE OF CARBOLIC ACID POISONING SIMULATING ACUTE SCARLATINAL NEPHRITIS.*

BY SAMUEL S. ADAMS, A.M., M.D.,

Washington, D. C.

Q. R., aged ten years, female, white, was visited February 3, 1904. The child had a moderately severe attack of scarlet fever without any troublesome symptoms. I saw her daily until February 9th, and thereafter on the following dates: 11th, 14th, 17th and 19th. She was nursed by her mother who was constantly insisting that the symptoms being so slight there was no necessity to keep the child in bed. I insisted, however, upon the instructions as to the general management being strictly carried out. It was impossible from beginning to end even to approximate the quantity of urine passed in any twenty-four hours, as the mother invariably had an excuse for not keeping it or not measuring it.

Urine Analysis No. 1.—February 5th.—Dark amber; cloudy; acid; 1.029; albumin, 0; sugar, 0; urea, grs. xiii to ℥i. Sediment shows large number of crystals of calcium oxalate; many desquamated cells, mostly squamous epithelium; few degenerated leukocytes. This and the succeeding urinalyses were made by Dr. Thomas S. Grasty.

At my visit on the 9th, the child complained of intense itching, so I instructed her mother to bathe her twice daily with a teaspoonful of carbolic acid to the quart of water (1-256). She handed me a 12 ounce bottle, which she said contained 1 ounce of carbolic acid to 11 ounces of water and asked how she could use it. I then told her to take a tablespoonful of her solution to the quart of warm water for the bathing (1-800).

I visited the patient several times between the 9th and 16th. Another examination of the urine was made as follows:—

Urine Analysis No. 2.—February 16th.—Pale amber; cloudy; faintly acid; 1.021; albumin, 0; sugar, 0; urea, grs. iv. to ℥i. Microscope shows urine loaded with crystals of calcium oxalate; few cells seen.

She was visited again on the 19th and found to be in excellent condition. Desquamation was very profuse and she was being judiciously fed. Her condition was so good I ordered chicken to be added to the diet. The itching had been allayed by the baths, there was neither tingling nor irritation of the skin from the carbolic acid and she was ordered to be kept in bed as long as desquamation continued.

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* Read before the Sixteenth Annual Meeting of the American Pediatric Society, Detroit, Mich., May 31, 1904.

On the morning of February 22d, I received a note from the mother telling me that the child was bright and happy, but had passed a fair quantity of dark urine, a specimen of which she sent to me.

Urine Analysis No. 3.—February 22d.—Smoky; cloudy; acid; 1.031; albumin present; sugar absent; urea, grs. ix to ℥i. Sediment shows red blood cells, hyaline and granular casts all in only moderate numbers; epithelial and pus cells; few uric acid crystals.

I saw the patient, whose eyes were only slightly puffed, otherwise she was in fine condition. Even now it was impossible to form any accurate idea about the amount of urine passed, but I satisfied myself that there was only a slight diminution of the daily excretion. Baths were stopped. The following day I had a specimen of urine examined at the Children's Hospital, which showed the absence of albumin and sugar, specific gravity, 1.038; urea, 12 grains to the ounce; a large number of red blood cells and a few cylindrical epithelial cells. The various tests for carbolic acid proved that the urine contained it.

February 24th. The puffiness has disappeared and she has no complaint.

Urine Analysis No. 4.—February 24th.—Smoky; cloudy; acid; 1.020; albumin, present; sugar, absent; urea, grs. vii to ℥i. Sediment shows few hyaline and a moderate number of coarse and finely granular casts; few blood cells and pus cells; epithelial cells; no crystals.

Urine Analysis No. 5.—February 26th.—Amber; very slightly dirty in color; slightly cloudy; very faintly acid; 1.023; albumin, slight trace present; sugar, absent; urea, grs. viss to ℥i. Sediment shows moderate number of granular casts; pus cells; few, epithelial cells; an occasional hyaline cast.

Urine Analysis No. 6.—February 29th.—Pale straw color; cloudy; faintly acid; 1.018; albumin, slight trace present; sugar, 0; urea, grs. vss to ℥i. Centrifuge shows hyaline and granular casts, both fine and coarse, in moderate numbers; pus and epithelial cells; no blood.

March 5th. She has steadily improved and the urinalysis showed:

Urine Analysis No. 7.—March 5th.—Pale straw color; cloudy, flocculent precipitate; acid; 1.030; albumin, 0; sugar, 0; urea, grs. viii to ℥i. Centrifuge shows an occasional granular cast; moderate number of pus cells; epithelial cells; much dirt and many bacteria.

March 9th. I discharged the patient, but warned her parents to notify me if any further trouble arose. She was now passing a large quantity of urine.

Urine Analysis No. 8.—March 9th.—Pale amber; cloudy; distinctly acid; 1.028; albumin, trace present; sugar, 0; urea, grs. vii to ℥i. Centrifuge shows a few casts, hyaline and granular; pus cells; few epithelial cells; uric acid crystals (few).

May 9th. I found the child in first class condition; in fact, far above her average health, weight and spirits. Urinalysis showed:

Urine Analysis No. 9.—Pale; cloudy; acid; 1.025; albumin, 0; sugar, 0; urea, grs. v to ℥i. Centrifuge showed amorphous urates; pus cells (few); epithelial cells (squamous).

Having previously reported cases of carbolic acid poisoning following its use on the skin, I was satisfied from the urinalysis made on February 22d that the nephritic symptoms were due to the irritation of the drug and not to the toxemic effect of the scarlatina. This opinion was confirmed by the speedy relief of the kidney irritation *pari pasu* with the elimination of the carbolic acid. Such a weak solution of the acid was used it seems reasonable to attribute the toxic effects to an idiosyncrasy of the patient.

Ignition of Ether Vapor by an Electric Light.—Every surgeon thoroughly appreciates the danger of an open lamp anywhere near ether vapor, but it is generally supposed that an electric incandescent light is perfectly harmless. To be sure, accidents from this cause are extremely rare, but D. H. Murray (*N. Y. Med. Jour.*, June 27, 1903) reports an instance in which the ether vapor about a cone, by which a patient was being anesthetized, was ignited when an electric light was turned on near by. The patient's hair was badly singed, but no serious injury resulted. As there was no exposed fire or blaze in the operating room at the time, it was concluded that the ignition resulted from the spark in the electric light, made when the contact took place in turning on the light. It is a possible danger worth remembering.—*Boston Medical and Surgical Journal.*

Clinical Memorandum.

A CASE OF INTESTINAL TOXEMIA WITH SOMNOLENCE AND HEADACHE.

BY LOUIS FISCHER, M.D.,
Visiting Physician to the Willard Parker and Riverside Hospitals, etc., New York.

Jennie R., thirteen years old; *family history* negative. *Previous history.*—Child born by natural delivery; was apparently normal at birth; was breast fed until fifteen months old. The mother noticed that for the first six months the child seemed to have some difficulty in breathing. At two years she was told by the physician that she had "scrofula." Also had enlarged tonsils in early childhood; had scarlatina, and later measles for which she was seven weeks in the Reception Hospital. At the age of seven she was badly frightened and has been rather nervous ever since. She once fell and struck her head, producing a scar over her right eye.

Menstrual History.—Started to menstruate almost a year ago. Menstruates every four weeks for seven to eight days with profuse discharge. Always has great pain at the menstrual period, and must remain in bed for the first few days. After menstruation there is a colorless discharge—fluor albus.

Present History.—For about two years she has noticed that she was often very drowsy. She could not pay attention in school. If she tried to read a book, in a few minutes her eyes would close. Since she started to menstruate she thinks she is drowsier than before. She left school about a year ago. She has had frequent headaches, is restless at night and dreams aloud. Falls asleep after eating a warm meal, not after eating cold food. Also falls asleep while working, sweeping or washing dishes, etc.

She first came to the German Poliklinik for treatment on January 9, 1904. Complained of excessive drowsiness, headaches and difficult breathing at times; she is generally constipated. The stomach is very sensitive, and she vomits when riding in a car. She has an enormous appetite, eating five meals a day.

Physical Examination.—The stomach is distended and there is a tympanitic percussion note extending one inch below the umbilicus. The colon is distended, and fecal masses can be plainly felt by palpation over the colon. The bowels do not move naturally, but require very strong cathartics. After an injection the feces are found to be hard, dry and scybalous masses. They are brownish-black in color.

The spleen was palpable, was not tender, and did not seem enlarged. The liver was somewhat enlarged and extended one-half inch below the right mammary line to one inch above the umbilicus. The liver was not tender on palpation. At no time was there any evidence of icterus.

Heart.—On percussion the heart was found enlarged. There was an accentuated second sound and a roughening over the aorta.

Lungs.—The lungs showed no abnormality.

General Appearance.—She was a well nourished girl with plenty of adipose, and quite muscular. Was quite well developed for her age. She was of a phlegmatic temperament. Mentally normal, although lacking in ordinary education. The circulation was good. Hands and feet warm. The superficial vessels were distended, the veins being very prominent. The pulse was of a feeble character, never more than 90; at times the pulse was as low as 76. The respiration was 22 and regular. The temperature by mouth was 99°F., by rectum 100°F.

Urine.—The examination of the urine gave a strong indican reaction. Neither albumin nor sugar was found. Microscopically the urine showed calcium phosphate crystals, also some crystals of triple-phosphate. Traces of bile were present.

Blood.—The blood contained a normal percentage of hemoglobin. The erythrocytes 5,400,000. Leukocytes 400,000. The blood did not give a Widal reaction and a stained specimen showed an absence of plasmodia.

In order to exclude eye trouble I sent the child to Dr. H. W. Wootton. He reported: "Examination of the eyes showed: O. D., hypermetropia 4 D.; O. S., hypermetropia 3 D.; astigmatism 1 D. Examination of choroid for tubercles, negative. No choked disc." Correcting glasses were ordered. Several weeks after correcting the eyes, the same sleepy condition reappeared. It was difficult to prevent the child from eating large quantities of warm food. Then the girl was referred to Dr. Wm. N. Leszynsky, to see if he could find any lesions of the brain and nervous system. He agreed with me that he found no evidence of cerebral trouble, and that the sleepy symptoms were due to the stomach.

Diagnosis.—Autotoxemia due to overeating, constipation, improper diet and insufficient exercise.

Treatment.—Careful attention to the bowels, out of door exercise, fruit, and cool food. I ordered nux vomica for the bowels and a cold enema morning and evening to stimulate the rectum and colon. I also ordered the child to drink a large quantity of water. She improved for weeks, and relapsed only when dietetic errors were permitted.

I am indebted to Dr. Herman T. Radin for assistance in this case.

65 East 90th Street.

Intestinal Tuberculosis. — From Hunter's researches in Hong Kong, where, out of 5,142 consecutive necropsies, only 13 cases of intestinal tuberculosis were found, and 8 of these considered as a secondary infection, being derived from tubercle foci in other parts of the body, leaving only 5 to be regarded as instances of primary intestinal tuberculosis. His conclusions (*British Med. Jour.*, May 14, 1904) are that primary tuberculosis of the intestine is rare under five years of age, and that tuberculosis of the mesenteric glands is also rare. These results, derived from a native population where tuberculosis is rife in all its forms and conditions exceptionally favorable for its dissemination, point to the alimentary canal as a rare avenue through which infection is conveyed in childhood.—*Journal of the American Medical Association.*

Camphor a Valuable Adjuvant in Tuberculosis. —For five years Koch (*Berliner Klin. Woch.,* XLI., No. 18) has been making systematic use of camphor in pulmonary tuberculosis. At first he gave it in subcutaneous injections of 1 gm. of camphorated oil daily for four days with ten-day intervals. His results were extremely satisfactory, but the injection method has its drawbacks, so he gives the camphor now in inunctions. He makes a salve with about 4 gms. camphor in the amount rubbed in at one time. He uses percutilan as a vehicle, a new substance which he says "actually slips through the skin." A little balsam of Peru is added and eucalyptus and rosemary oil. These inunctions are made by the patient on five successive days and then a ten-day pause. The amount of sputum increases remarkably by the second day and then expectoration almost ceases, while the other symptoms are correspondingly improved. Equally favorable results were observed in emphysema and bronchitis.—*Journal of the American Medical Association.*

ARCHIVES OF PEDIATRICS.

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TREATMENT OF PROLAPSE OF THE ANUS.

Prolapse of the anus is a lesion of the mucous membrane and is to be distinguished from prolapse of the rectum which involves the entire wall of the gut.

The factors in the incidence of this condition are:—First, a weakened anal sphincter. Second, redundancy and abnormal mobility on the deeper parts of the mucous membrane of the lower bowel. Third, increased peristalsis.

The more frequently the prolapse occurs the more pronounced become the abnormal factors leading to it.

The causative conditions may be primary (congenital) or secondary to any form of disease which leads to general debility, or the primary and secondary factors may both be involved in any given case. Prolapse of the anus is almost entirely confined to infants and young children, and is especially frequent in those living in institutions.

Treatment must be carried out along systematic lines. Prophylaxis is an important consideration. All children of congenitally weak musculature, or victims of debilitating disease, diarrhea, or chronic constipation, should be closely watched to detect a possible prolapse in its incipiency, in the meantime undergoing such of the following details of treatment as are applicable to the individual case.

Medicinal or palliative treatment will cure nearly all of the secondary type of cases, and a good proportion of the primary form. The constitutional measures, tonic, hygienic, and dietetic, are of the utmost benefit and are the only rational foundation for a permanent cure. The feces must be kept soft and smooth to avoid undue effort in expelling them.

Posture at stool is important. During defecation the child should lie upon one side, preferably the left, with the pelvis somewhat elevated. In this way gravity, instead of favoring prolapse as it does with the child in the erect posture, tends to draw the movable mucous membrane up into the bowel. Meanwhile the nurse holds the buttocks and at the first sign of protrusion, pushes them together so as to prevent prolapse. When, in spite of careful attention to the diet, constipation appears, an injection to soften the feces should precede each movement. Between defecations, if the prolapse tends to recur, the buttocks must be held together by adhesive strapping.

The tone of the debilitated structures is greatly improved by daily massage of the perineum, sphincter and lower bowel; by cold douches to the perineum and lumbar cord; and sometimes by the application of electricity.

It must be remembered that a single well-marked escape of the prolapse may undo the work of days of conscientious treatment.

If, after several months, the patient's general condition has become satisfactory, but, in spite of careful attention to the details of palliative treatment, the prolapse continues to occur or even grows larger, we must turn to radical measures.

Perhaps the most common means employed to obtain a radical cure is the actual cautery. This is applied in three or four places around the lumen of the gut in longitudinal lines running up 4 to 8 cm. above the sphincter. The eschar should be at least ½ cm. wide and should involve nearly the whole thickness of the mucous membrane. The object is to have the healed cicatrices adherent to the deeper structures and so limit the mobility of the mucous membrane upon them; to have the cicatrices act as splints so that the mucous membrane cannot fold upon itself so readily; and to somewhat narrow the lumen. This method has the advantages of simplicity and absence of hemorrhage. However, general anethesia is required and there is always the danger of infection creeping beneath the eschar as it begins to separate. It is difficult in practice to determine how much damage to do at a given sitting, and the method lacks that precision which is characteristic of good surgical technique. Moreover, it is a number of weeks before the results of a cauterization can be fully judged, and if, as is frequently the case, the procedure must be repeated several times, the treatment drags over a long period, during which all the troublesome details of the palliative treatment above described must be adhered to. In a fair proportion of cases the method fails entirely.

For cases of moderate severity, a simple surgical procedure is often efficacious. The method consists in an excision of a cuneiform mass of tissue from the post-anal region, including the posterior part of the sphincter. The broad part of the wedge is at the anal margin while its edge looks toward the sacrococcygeal region. The wound is sutured by catgut, edge to edge, with special sutures for the sphincter, the calibre of which is diminished so that it works at better mechanical advantage. The operation is simple and brief; bleeding is slight with primary union in seven days. This operation has succeeded in cases where several cauterizations had failed.

In more extensive cases still more radical measures may be necessary. Of these perhaps the best consists in excision of the prolapsing membrane, just as in Whitehead's operation for hemorrhoids in the adult. If necessary a portion of sphincter may be removed. This operation is prolonged and the bleeding is profuse.

It must be remembered that children do not bear loss of blood at all well, and, therefore, this operation should be attempted only in cases otherwise robust.

If, after any of the preceding methods, the result is only partially satisfactory, it may be much improved by recourse to the means described under palliative treatment.

ALFRED S. TAYLOR.

The Kidneys in Scarlet Fever and Diphtheria.—O. Heubner (*Munch. Med. Wochenschr.*, January 27, 1903) has examined the kidneys in 2 cases of pure scarlet fever, in which death was the result of cardiac weakness and uremia, and 2 cases of diphtheria, not complicated with either bronchial or pulmonary disease. Small pieces of kidney were hardened for one day in 10 per cent. formalin, cut with a freezing microtome, overstained with hematoxylin, differentiated with hydrochloric acid, and counterstained with eosin; other pieces were placed in 1 per cent. solution of hydrochloric acid and formalin, and kept in an oven for months for the purpose of dissolving out the connective tissue and leaving the uriniferous tubules intact. In the scarlet fever cases he found exquisite hemorrhagic disease with especial involvement of the glomeruli, and secondary disease of the renal epithelium. The epithelium of the canals nearest the glomeruli had degenerated and become mixed with coagulated blood; the straight tubules contained hyalin casts and epithelial detritus. In the diphtheria cases there were few hemorrhages, and they were found in the straight tubules. The primary disturbance here was the degeneration of the epithelium of Henle's loop, its ascending limb, and the convoluted tubules.—*American Medicine.*

Bibliography.

Lectures to General Practitioners on the Diseases of the Stomach and Intestines, with an Account of their Relations to Other Diseases, and of the Most Recent Methods Applicable to the Diagnosis and Treatment of them in General; also, "The Gastro-Intestinal Clinic," in which all such Diseases are Separately Considered. By **Boardman Reed, M.D.** Pp. 1,024. Illustrated. New York: E. B. Treat & Co., Publishers. 1904. Price, cloth, $5.00; half morocco, $6.00.

Dr. Reed's book on the Diseases of the Stomach and Intestines will be a most valuable addition to the working library of the general practitioner. The descriptions of disease, the diagnosis and treatment, are clear, concise, intelligent and thoroughly modern. The author is sound in his teachings, and he teaches well. It is a relief to be free from the prolixity and the spirit of contention that mark the productions of the majority of the foreign writers on these subjects. Nevertheless, the lack of these qualities, which make the book so desirable for the general practitioner, detract from its value to the specialist.

Certain mooted and much discussed questions are not considered by the author in all their bearings, but are passed over briefly and incompletely. For example, the diagnostic value of succussion as an evidence of atony, which has of late been so thoroughly discussed by Elsner, Cohnheim, Kutner and Stiller, is accepted by the author as a proven fact, without reserve. Again, the description of Reichmann's disease, on page 528, is limited to a single paragraph, simply stating that continuous hypersecretion may occur as a neurosis, or as an evidence of pyloric stenosis or gastric dilatation. On page 403 the differential diagnosis of Reichmann's disease from pyloric stenosis is given. These are apparently contradictory statements, and the slurring over such an important symptom complex seriously detracts from the scientific value of the book.

Neither can we agree with the statement that the Weber-Van Deen test for blood in gastric and intestinal contents is of service only when the blood is fresh, and is not of use when the blood is altered. This is opposed utterly to the universal experience of those who have employed the test.

These, however, are minor criticisms. The book is not intended as a standard of scientific excellence, nor can it rank with many other works on the same subject as an authoritative treatise—such is not apparently the author's intention—but for the general practitioner it is the most practical and intelligible book on the subject we have seen, and it should be read by everyone who has to do with this progressive department of medicine.

An Early Sign of Typhoid Fever in Childhood.—It is stated (*La Semaine Médicale,* May 27, 1903) that a Hungarian physician, J. Bernard, has made use of a sign that apparently is of value in making an early diagnosis of infantile typhoid. When that disease is suspected Bernard places himself at the right side of the patient and applies the pulp of the fingers of both hands to the right iliac fossa and palpates carefully that region, rolling the tissues under the fingers as in making an examination of the liver. In cases of typhoid there may be felt in the ileocecal region two or three tumefactions in a line with the axis of the body and 1 cm. or 2 cm. apart. They are the size of a hazelnut or pigeon egg and have their long axis also in the axis of the body. These tumefactions appear only toward the end of the first week and disappear in three or four days. It is a question whether they are hypertrophied follicles of the ileum or enlarged mesenteric lymph nodes.—*American Medicine.*

Hereditary Jaundice. — Pick (*Wien. klin. Wochenschr.,* April 23, 1903) retails some interesting histories of several members of one family, all of whom were afflicted with hereditary jaundice. The first case was that of a soldier, who went into hospital last November. From his youth he had always been jaundiced. His mother, who had died in her thirty-fifth year a few hours after her tenth confinement, had also been jaundiced since birth. A seventeen-year-old brother and a twenty-six-year-old sister of the patient had also been jaundiced since birth. Two other sisters were alive, healthy, and had never been jaundiced. The father occasionally suffered from epileptic fits. The patient himself had always all his life suffered from a weak stomach, fatty food and meat had been especially badly borne, while, on the other hand, vegetables were always well digested. For some time he had suffered from pain in the right hypochondrium, from loss of appetite, and now and then from vomiting of mucus. He had suffered from no other disease.—*Edinburgh Medical Journal.*

Society Reports.

THE NEW YORK ACADEMY OF MEDICINE.—SECTION ON PEDIATRICS.

Stated Meeting, Thursday, November 10, 1904.

DAVID BOVAIRD, JR., M.D., CHAIRMAN.

ABDOMINAL TUBERCULOSIS.

DR. J. FINLEY BELL, of Englewood, N. J., presented a child, twenty-two months of age, whom he saw first last January. She then had indefinite symptoms, peevishness, febrile attacks, and a dry and persistent cough. The febrile attacks became more frequent and changed from an intermittent to a remittent character. The abdomen became large and continued to swell even during an attack of bronchopneumonia which began on February 20th. The patient was admitted to the Englewood Hospital in March and was under observation for some time. Dr. Koplik saw the patient and decided that she had an attack of bronchopneumonia and some malignant growth of some abdominal organ, probably a sarcoma of the kidney. Tympanites, which was quite marked, subsided after three weeks in the hospital and then a tumor was outlined which extended from the umbilicus to the left flank. Clear serum was withdrawn, which revealed 2 per cent. albumin, according to Purdy's test, and some small mononuclear leukocytes. The smear of precipitated serum, when stained, showed no tubercle bacilli, but 10 c.c. of the serum injected into the abdomen of a guinea-pig caused enlargement of the inguinal lymph nodes and a general tuberculosis. The mass was still present in the child's abdomen, but was steadily diminishing. Plenty of fresh air, good feeding and the administration of guaiacol constituted the treatment given.

DR. L. E. LA FÉTRA said that the consensus of opinion among those who had the most experience during recent years with such cases was that it was better to treat cases of tuberculous peritonitis without operation. The cases with much fluid but few adhesions were the ones that did well with operation, and they were the very ones that did well or better without operation. Of course, if the patient made no improvement after several weeks of medical treatment, the operation should be resorted to. He believed the child would eventually make a perfect recovery.

CLINICAL EXPERIENCE WITH ANTITOXIN.

Dr. Louis Fischer contributed this paper. He said that the dose of antitoxin required must still be considered empirical, because we could not as yet accurately determine the quantity of toxin in the system. He would bring forward some facts in regard to small and large doses taken from his hospital experience.

Résumé of cases reported from the Willard Parker Hospital during July, August and September, 1903:—

	Number.	Died.	Mortality, Per Cent.	Recovery.
Tonsillar and Pharyngeal..	292	34	11.64	88.36
Tube Cases..............	69	42	60.87	39.13

Résumé of cases reported at the Willard Parker Hospital during July, August, September and October, 1904:—

	Number.	Died.	Mortality, Per Cent.	Recovery.
Tonsillar and Pharyngeal..	253	25	9.84	90.16
Tube Cases..............	115	41	35.65	64.35

The average dose of antitoxin administered during 1903 was for July, 1,500; for August, 1,700, and for September, 2,500 units; the average dose of antitoxin administered during 1904 was for July, 2,500; for August, 5,000, and for September, between 5,000 and 10,000 units. As a result, it was shown about 21 per cent. mortality where the dose was small, against a mortality of 14 per cent. when the larger doses were used.

The histories of a number of cases were related and reference was made to Dr. McCollom's work with large doses of antitoxin at the Boston City Hospital. Too much reliance was placed upon antitoxin, regardless of vital necessities, such as failure to stimulate the emunctories. Rashes usually appeared between the fifth and seventh day, and generally lasted about three days. In some cases two distinct rashes could be found which corresponded in time to different injections. The proper dose of antitoxin was one which would inhibit the extension of the pseudomembrane, subdue the fever, and check the progress of the disease. For a mild case, 2,500 to 5,000 units were used. If there was a large exudate on the tonsils and pharynx, from 5,000 to 10,000 units should be given on the first day and repeated within twelve hours, if no improvement was shown. He had never seen any case that suffered any ill-effects from large doses.

In cases of laryngeal diphtheria, with stenosis, the initial dose should be 10,000 units. These large doses sometimes produced a slight reaction, the temperature running up a degree or two; but little, if any, effect being noted on the pulse. The feeding of these patients was of great importance; in private practice he never used forced feeding.

DR. HENRY W. BERG said that there was a great difference of opinion regarding the dosage of antitoxin mainly because nothing was as yet known regarding the relation between the toxins of the disease and the antitoxin, which he believed to be a quantitative one. If an animal be injected with a certain quantity of toxins, the animal would die; but if a certain amount of antitoxin be mixed with it and injected at the same time, the animal would live. If one knew how much toxin was being absorbed one would know the amount of antitoxin to introduce. It was always safer to give more than less. He said that in looking hastily over the reports, taking only the pharyngeal cases, he was impressed with the fact that the figures showed but little difference regarding the mortality rates for certain months of certain years. So far as reaching any real knowledge regarding the exact dose of diphtheria antitoxin, he felt we were groping in the dark.

The question of dosage, whether large or small, depended upon the severity and location of the lesions. If there was a severe lesion in the pharynx or nose, a large dose of antitoxin should be given, and he did not believe that better results were to be had from 5,000 than from 3,000. Start with a large dose of 3,000 units; if no effect was produced within three hours, give another 3,000; sometimes double that dose. Another symptom upon which he laid a great deal of stress was the rapidity of the pulse; if the heart was beating 140 a minute, with the temperature only 100° F., he regarded this as being due to a toxic myocarditis and gave large doses of antitoxin; if within twelve or twenty-four hours the pulse had not toned down he repeated the dose, sometimes doubling it. The temperature in diphtheria, as a rule, was not high, and the typical effect of antitoxin was to reduce the temperature within twelve to twenty-four hours. The further away from the seat of the diphtheritic lesion enlarged lymph nodes were the greater should be the dose of antitoxin administered. These lymph nodes become enlarged in their endeavor to prevent the spread of the toxins into the system. Differences of opinion existed among physicians as to what constituted a large, and what constituted a small, dose of antitoxin; some even think that 1,500 units to be a large dose. In giving very large doses, like 60,000 units, the emunctories were overworked; they are trying to rid the system of the toxins of diphtheria, and, when large amounts of heterogeneous serum are introduced, an extra amount of work is thrown upon them, sometimes to their injury. He did not believe the rashes were due so much to the antitoxin as to the efforts of the skin to throw off a foreign body. If one injected this antitoxin into healthy systems rashes would appear in 25 per cent. of the cases. He thought that rashes were a conservative expression on the part of the skin in its attempt to throw off and get rid of foreign material in the blood. He thought that Dr. McCollom used too much serum.

Dr. William H. Park said he would like to refer briefly to some laboratory points which might prove of interest, and which were not often recognized. What Dr. Berg had stated regarding the quantitative relationship between the toxins and the antitoxins he believed to be in part true; if the toxins and antitoxins were mixed before introducing, his statement would hold good, but it would not hold good if the case was allowed to run on a few hours, and then the antitoxin injected. If one took a given, but fatal, quantity of toxin and injected it into an animal and *immediately* gave a certain amount of antitoxin, the animal would be saved; but if one waited four hours before giving the antitoxin, it would not protect the animal unless about ten times the amount were given. If one waited six or eight hours it would require one hundred times as much. The reason for this was that the longer one waited before giving the antitoxin the greater the chance for the toxin to combine or enter into some definite relation with the cells.

The question as to whether large or small doses of antitoxin do harm or not was an important one. It has been shown in Vienna that, in scarlet fever, giving large amounts of the serum did not make more trouble than the medium-sized doses. He had visited the Boston City Hospital with Dr. McCollom, who had pointed out his splendid results. Dr. Park said that for three years he had experimented with antitoxin as follows: During one year, the dose was from 10,000 to 20,000; the next year it was between 5,000 and 10,000; the third year it was between 3,000 and 5,000. It was very difficult to find out which dosage produced the best results. Only three or four seemed to be made worse by the small doses. In bad cases of diphtheria, Dr. Park advocated using large doses. In mild cases, either early or late, involving tonsils and pharynx, he used 2,000 units; in severe early cases, 4,000 units; in ordinary laryngeal cases, 5,000; in malignant severe cases, tonsillar, pharyngeal or nasal, 10,000, and repeat this dose at the end of twelve hours unless the patient is distinctly better. He emphasized the fact that the antitoxin should be given for the diphtheria and not for any accompanying condition, like a pneumonia.

Dr. Henry F. Koester referred to those cases of diphtheria with foul-smelling odor, subnormal temperatures, etc., and said that it was safe to begin with 10,000 units and repeat the dose in twelve hours. If only 3,000 or 5,000 had been injected in such cases the membrane would be present the day following. At the same time one might give as much as 10,000 or 20,000 and still see the membrane the day following. But if one should take a swab one could readily wind the membrane around it, showing that membrane was merely lying there detached. The same thing was seen in nasal diphtheria.

With regard to rashes, he said the first serum produced in 1894 caused no rashes. He did not believe these rashes were due to the large doses of antitoxin.

Dr. John Howland said that the statistics reported by Dr. Fischer regarding the effects of large doses of antitoxin in diphtheria were not at all convincing. The number of cases so far presented was small, yet it seemed to him that any decided reduction in the death rate could not take place merely because of increased dosage of antitoxin. He believed that it was far preferable to give a large initial dose of antitoxin than to give smaller and repeated doses, with twelve, eighteen or twenty-four hours in between. During this interval the toxins were circulating in the blood and became more or less fixed in the tissue cells; after a time the antitoxin is powerless to help.

With regard to pneumonia patients, although there was a streptococcic, a pneumococcic and a staphylococcic infection there was also a Klebs-Löffler infection and in these cases, an increased amount of toxins must be caused by these diphtheria germs. Fifteen per cent. of the cases of pneumonia, following or accompanying diphtheria, were caused, according to Councilman, by the Klebs-Löffler bacilli alone. Therefore, the dose of the antitoxin should be three, four or five times larger than in ordinary cases.

DR. MATTHIAS NICOLL, JR., personally, did not believe that the increased dose of antitoxin reduced the death rate of diphtheria. Statistics for former years, before the days of antitoxin, compared favorably with those of today, if one deals exclusively with the late laryngeal cases.

DR. SARA WELT-KAKELS said that the *Lancet* of some years ago reported the administration of even larger doses of antitoxin than those given by Dr. McCollom; between 6,000 and 20,000 units were given in a single dose. In bad cases the antitoxin was administered intravenously and not subcutaneously. The largest single dose recorded was 30,000 and the largest total dosage was 82,000 units. Dr. McCollom gave in one instance 60,000 units. The mortality reported in the *Lancet* was only 6 per cent., although but 50 cases were recorded. She visited the Children's Department in a Berlin hospital last summer and noted that the results from small doses of antitoxin were as good as from large doses; consequently, they were using the smaller doses. Dr. Welt-Kakels preferred the giving of smaller doses. She did not think it was indifferent to the child to give such large doses.

DR. SCOTT said that the dose of antitoxin depended upon the severity of the case and the severity of the cases depended upon the lesion in the throat. The question arose as to whether the infection was purely diphtheritic or a mixed one. If it was a pure diphtheritic one, with subnormal or low temperature, etc., small and repeated doses should be administered. Whereas, in the more severe infection of the tonsils and pharynx, large and repeated doses of antitoxin should be given. In the Boston City Hospital as high as 90,000 units had been given. The dosage of antitoxin should be according to the lesions, according to the patient's condition, and according to the environment.

DR. J. FINLEY BELL believed that when antitoxin was administered to the effect of producing rashes and other evidences of systemic infection, it would seriously modify the progress of diphtheria.

DR. FISCHER, in closing the discussion, expressed the wish that the Department of Health would make antitoxin of stronger potency, and dispense the antitoxin in larger amounts in single bottles. He believed that so many rashes would not occur if the larger doses were given. The dose of antitoxin was 2,000 units for mild cases; 5,000 units for severe cases, and 10,000 for laryngeal cases. He thought it wise to give up using the term "thousands" in referring to the dose of antitoxin; so many physicians were frightened when so many "thousand" units were mentioned. He certainly believed that the larger doses of antitoxin had better effects than the smaller doses. With the use of these large doses one could extubate much earlier than formerly. He emphasized the fact that treatment of diphtheria did not consist alone in the administration of antitoxin; hygienic measures should not be neglected.

Intubation. — Biernacki and Muir (*British Med. Jour.*, May 14, 1904) from their experience would use intubation as a treatment in laryngeal diphtheria as against tracheotomy in the absence of clinical contraindications. Among these they mention severe involvement of the fauces and nasal passages, though even in severe cases intubation is not often contraindicated. With palpable edema of the upper part of the larynx, ulceration is a danger in some cases. The presence of membrane low down in the trachea as a contraindication is in doubt. In two cases intubation gave relief, although subsequent casts showing the bifurcation of the trachea were coughed up. The last condition noted is a moribund condition referable to obstruction, and there is a possibility that the temporarily increased asphyxiation involved in intubation is inadmissible in such cases. An extensive bronchopneumonia as a contraindication is considered, and they doubt whether intubation has really an effect on it. If there is much tenacious sputum, intubation may be rendered ineffectual by constant blocking of the tube, but such a contingency cannot well be foreseen. If there should be a severe blocking of the tube and intubation only partially relieve it, tracheotomy would have to be performed; otherwise time should be allowed for the child to settle down. They do not believe in retention of the tube under ordinary conditions past the fourth day. It should then be taken out and kept out, if possible.—*Journal of the American Medical Association.*

THE PHILADELPHIA PEDIATRIC SOCIETY.

Stated Meeting, Tuesday, November 8, 1904.

John H. Jopson, M.D., President.

Dr. Geo. W. Norris showed a patient with

CONGENITAL HEART DISEASE.

Both of the patient's parents have had pulmonary tuberculosis for a number of years, and are now under treatment. The patient, J. C., aged five years, was born a blue baby, and remained so for a short time after birth. He had varicella and pertussis uneventfully, two years ago. When two years old he had an attack of spasmodic croup. At this time he was very ill, and was noticed to be markedly cyanosed. He has been troubled with cough for a number of years. This symptom is always worse in the morning and after exercise, but is unaccompanied by expectoration. He becomes slightly cyanotic upon exertion, also somewhat dyspneic; and the mother says that he is always cold.

The child is somewhat pale in color, but is fairly well nourished. He is of fair complexion, has rather a light frame, but seems, both mentally and physically, developed commensurately with his age.

On physical examination the apex beat of the heart is found in the fifth interspace a trifle to the left of the normal. A fine systolic thrill is felt over the entire precordium. The heart dullness seems to be about normal on the left, but on the right extends fully one inch and a half beyond the edge of the sternum. Between the third and fourth right costal cartilages a loud, long, rasping, high-pitched murmur is heard; which completely replaces the first sound of the heart. It is transmitted with greatest intensity toward the epigastrium, but may be heard at any part of either chest, either anteriorly or posteriorly. The pulmonary second sound does not seem to be accentuated, and the aortic sound is barely audible. The radial pulses are synchronous, equal, regular and of fair volume.

The lungs show an area of impaired resonance posteriorly in the region of the heart. Elsewhere the resonance seems good.

At no point in the chest is there any alteration in the character of the expiration. A few fine moist crackling râles are heard diffusely scattered throughout both lungs. There is no enlargement of the liver, or other physical abnormality. The pulse is 120, the respiration 40, and the temperature 97° F.

From the character and location of the murmur, as well as from the other physical signs and from the apparent absence of an etiological factor it was concluded that the case is one of congenital heart disease. From the evidence in hand it seems likely that the lesion consists either in a defective ventricular septum, or a patulous foramen ovale, or perhaps both; either with or without a patulous ductus arteriosus. The possibility of tricuspid insufficiency must be considered, although its presence would seem unlikely in the absence of symptoms. It may be stated, however, that no less an authority than Gibson believes that this condition is much more common than is generally supposed; although it is usually overlooked on account of being unproductive of symptoms.

Dr. Hamill said he had never heard a murmur in the peculiar situation of this murmur and with such marked transmission to the right. He thought the possibility of a tricuspid lesion should be considered, though, on the whole, Dr. Norris' explanation of the signs was perhaps the most probable.

Dr. Norris said he had considered the possibility of a tricuspid lesion particularly because at the time of the first examination the murmur was heard best at the tricuspid area. Upon re-examination, however, he became convinced that the maximum intensity was on the sternum at the junction of the third or fourth rib. In addition to this there had been no signs of the mechanical effect of tricuspid regurgitation, such as pulsation of the liver, and he had, therefore, become convinced that the condition was not a tricuspid one.

Drs. C. Y. White and Verner Nisbet showed specimens of a

HYPERNEPHROMA OF THE RIGHT SUPRARENAL GLAND WITH METASTASIS, AND HYPERTROPHY OF THE EXTERNAL GENITALIA IN A CHILD OF TWO YEARS.

The patient from whom the following specimens were obtained was shown before the Philadelphia Pediatric Society on

October 13, 1903, by Dr. D. J. Milton Miller, as "A Case of Abdominal Tumor (Sarcoma of Kidney?) and Pseudohermaphroditism in a Child of Two Years." (ARCHIVES OF PEDIATRICS, Vol. XX., 1903, p. 933.)

The subsequent history of the case shows a rapid increase of the previously described symptoms—increasing dyspnea, marked congestion of the face, profuse perspiration, luxuriant growth of pubic hair, and great abdominal enlargement. On October 23, 1903, an exploratory laparotomy was performed, but the tumor was found to be so large, adherent and vascular, that removal was considered inadvisable. The child survived the operation, and also an attack of measles and bronchopneumonia, but finally died from exhaustion on September 24, 1904. Toward the end of the disease the general appearance of the child was striking. The dark, but not bronzed skin, anxious, prominent eyes, thick neck, luxuriant pubic hair, hypertrophied genitalia, and short, thick figure (height, 36 inches, abdominal circumference, 24 inches), combined with her waddling gait, gave the appearance of a little elderly woman.

The autopsy was performed twelve hours after death and a large tumor of the right suprarenal gland was found with metastasis to the liver, mesenteric lymph nodes and right lung. The microscopic examination showed the tumor to be a hypernephroma.

The external genitalia were moderately hypertrophied. The pubic region was covered with coarse hair, but no excess of hair was observed on the remainder of the body. The labia were hypertrophied and the labia minora projected from the vulva. The clitoris measured 4 cm. in length and the prepuce could be retracted. The urethral orifice was situated in the vestibule in its normal position. The ovaries were enlarged, but otherwise the internal genitalia were those of a normal female child. The microscopic examination of the tumor will be reported in detail later.

DR. D. J. MILTON MILLER referred to the fact that he had exhibited the child last year before the Society, and that the diagnosis at that time was sarcoma of the kidney with secondary deposits in the liver. A correct diagnosis during life would have been impossible, and, indeed, the origin of the tumor was determined only by a very careful pathological examination. As to the nature of the growth, Dr. White, before the microscopic examination, had regarded it as sarcomatous.

Dr. Jopson said that he had seen the case many times during life, and with others had been very much interested in it because of the presence of so large a mass together with maintenance of relatively good health. Dr. Hutchinson had done an exploratory operation, but had found so many adhesions that it was impossible to do anything but close the wound at once. The operation had had no bad effect and the child lived over a year afterward. The relation to precocious puberty is an interesting point and in this condition it has been repeatedly noted. The same condition has been seen also in pelvic tumors in children, and in the latter instance it has been attributed to an increased blood supply. In this case the only evidences of precocious puberty were the precocious growth of pubic hair and the marked development of the clitoris.

Dr. Nisbet, in closing, said it was interesting to know that neither during life nor at autopsy was any bronzing of the skin found.

Dr. D. L. Edsall read a paper on

TYPHOIDAL INSANITY IN CHILDHOOD, WITH A DISCUSSION OF ITS CHARACTERS AND ITS PROGNOSIS.

A study of the literature readily showed over 80 cases and no attempt was made to make the collection of cases complete. Dr. Edsall considered that the condition is undoubtedly somewhat more frequent than is commonly thought, particularly in the milder forms. Mania is unquestionably the commonest form; dementia next most frequent; the next most common group simple delusions, hallucinations, etc.; after these follows simple melancholia without any maniacal tendencies. The prognosis is certainly somewhat more grave than the statements of general clinicians and pediatrists would indicate; though the patients usually get well, a certain number of the manias and melancholias do not recover, and of the dementias reported in the literature, a very large proportion persist. The character of the insanity is, therefore, of great importance in establishing a prognosis. The importance of the nutritional element in these cases was especially insisted upon. Two personal cases were reported —one a simple dementia that recovered; the other, a case of melancholia, with occasional maniacal outbreaks.

Dr. J. P. Crozer Griffith said he believed with Dr. Edsall that the statistics that had been read showed probably too unfavorable a prognosis, and that the condition is also more frequent than they would indicate. An analogous series of statistics, that emphasized this statement, was the collection of cases of typhoid fever in infants made by Dr. Griffith and Dr. Ostheimer. Typhoid fever in early life is certainly more common than even those statistics would indicate, and certainly has a much smaller mortality than they show, the reason being that the mild cases are either overlooked or, at any rate, never reported, while a relatively large proportion of the severe and fatal cases are reported. The same is undoubtedly true of posttyphoidal insanity in childhood. Of this condition, Dr. Griffith has seen 2 or 3 cases; one that was reported by him some years ago showed conditions much like those in Dr. Edsall's case, *i. e.*, various curious delusions which were usually associated with fear, and also a varying condition of profound depression and excitement.

Another child, a boy eight or ten years old, was of interest because it was so hard to say when the condition began with him. In this case the nutritional element suggested by Dr. Edsall was very evident for the child had been very delirious, he had eaten extremely little, and there had been no attempt to give him the proper amount of food or to stimulate him. The result was that the delirium grew wilder and wilder; and as the fever grew less the delirium persisted and grew worse. For days the boy almost constantly screamed so loudly that he could be heard a long distance from the house; the screams ceasing only when his voice gave out. He gradually improved and ultimately recovered entirely. A considerable number of cases of typhoid fever show much more marked mental confusion than is normal with this disease, and, as Dr. Edsall said, we sometimes see distinct delusions during the course of the disease. As such conditions are sufficient to suggest the possibility that an actual insanity may develop, he agreed that such cases should be fed freely and other measures used in the attempt to prevent any further mental derangement. Usually it does not develop; occasionally, however, it, of course, does, and proper prophylaxis is very important.

Dr. Griffith asked what Dr. Edsall's searches of the literature showed as to the period of development of the insanity; this would have a large influence upon the question whether it is toxic or nutritional. If it appears during the course of the disease, it is certainly often toxic. When it appears during convalescence it is probably most commonly nutritional.

Dr. Hamill said that he had learned an early lesson concerning the relation of typhoidal mental derangements to imperfect nutrition. In a case that he had seen when he was Dr. Henry's resident in the Philadelphia Hospital, a liquid diet had been continued because of the persistence of a slightly elevated temperature. The patient constantly demanded food. He became maniacal after a short time, but still persisted in his demand for food. When his diet was increased the mania rapidly disappeared.

Dr. Hamill had never seen actual insanity following typhoid fever in a child, but he had seen numerous cases of marked mental disturbance in children in the course of the disease, and last winter in his service at the Polyclinic Hospital such conditions were so extremely frequent as to be the subject of repeated remark. He meant by this a very excessive irritability in the children and frequent hallucinations or delusions. He mentioned one instance, that of a colored child, that never spoke without yelling at the top of its voice. The child also had hallucinations and delusions. This abnormal state terminated with great abruptness, the child one day suddenly seeming entirely rational.

He believed that these conditions were more common last winter than he had ever seen them before; a fact which would, to some extent, bear out the possibility mentioned by Dr. Edsall, that mental derangements are more common in some epidemics of typhoid fever than in others.

Dr. Eleanor C. Jones described a case she had seen a few months ago in a girl, in which there was very pronounced delirium during the course of the disease, and the delirium continued during convalescence. In this case there were also other symptoms much like those in Dr. Edsall's case. In this instance, the condition was certainly largely nutritional, for when the child's food was quickly increased, it rapidly responded with improvement, and after three weeks was dismissed well.

Dr. Edsall said that he did not wish to be understood as stating that posttyphoidal insanity is always a nutritional condition. It is certainly sometimes toxic, but in a large proportion of cases it is almost, or perhaps wholly, nutritional in its origin; and even when it has almost undoubtedly originated in the toxemia, it persists because of the disturbance of nutrition that has resulted from the disease. One has frequent opportunity to be convinced of this in a review of the literature and occasionally in one's own experience. He mentioned a case which was seen a few months before in which there had been hemorrhages in an adult. The repeated and severe hemorrhages had led to the very marked reduction in the man's diet and necessarily only small amounts of food were given for quite a long time. The man had first begged for more food, but soon he fell into a condition of such marked inanition that he could hardly be forced to take food, and emaciated and lost strength rapidly, and soon became insane. Forced feeding, partly through the stomach tube, produced improvement in this man; but he suddenly died, probably largely as the result of a heart lesion which he had before his typhoid fever came on. The nutritional element is recognized by most alienists as being an exceedingly important point in most cases, particularly in the treatment of the condition. It is certainly an extremely important matter to keep in mind because it is one that is usually so readily controlled.

DR. GRIFFITH asked whether Dr. Edsall had determined that there was any relation between insanity and aphasia. A number of authors, Henoch and others, have stated that aphasia is common in children after typhoid fever. He wished to know whether the literature showed many instances of real aphasia, or whether the speechlessness was merely a part of the mental disturbance.

DR. EDSALL replied that so far as he could determine from a rather hasty review of the literature relative to the question of aphasia in childhood after typhoid fever that true aphasia itself occurs occasionally, but that in a number of the cases that have been called aphasia the speech disturbance has been only a part of the general stupidity of a dementia or of the depression of a melancholia. In adults one often sees speechlessness that may last for a long time, and may be due to mere unwillingness to speak or to general weakness of intellect, and not to any defect in the speech mechanism itself. One may see the same thing in children. That this was the case in some instances in the literature that were called aphasia, is apparently shown by the fact that in some cases the children, when their moods changed would talk most excessively. Aphasia undoubtedly occurs, but probably somewhat less frequently than has been generally believed.

Current Literature.

PATHOLOGY.

Metteucci, G. : A Case of Congenital Ectopia of the Heart in a Living Fetus. (*Gaz. degli Ospedali*, 1903, No. 62.)

This case is interesting, both on account of the various anomalies presented, and on account of the symptoms which the author observed during the forty-eight hours of the child's life. There was complete absence of the sternum, and the ribs were united by means of muscular and fibrous tissue. A projection, measuring 3 cm. over the level of the chest, 9 cm. in length and 6 cm. in width, was noted, extending from the left parasternal line to the mammary line, and from the jugular notch to the ensiform. This prominence was covered by a thin membrane, the pericardium. Beneath this tense membrane a pulsating body moving with regular rhythmic beats and simultaneous with the radial pulse was observed. The author found that the apex of the heart beat against the pericardium and lifted it, thus proving the theory of Ludwig concerning the cardiac impulse. He was also able to confirm the theory of Henle that during the ventricular systole there is a reduction in the size of the heart, and also observed the rotatory movement of this organ. The cardiac sounds were not clear, probably on acount of the numerous irregular communications within it. At the autopsy the pericardium was found adherent only to the posterior surface of the heart; the apex was formed exclusively by the left ventricle which communicated with the right ventricle by means of a small opening. The aorta began between the two auricles, and the valves were normal in arrangement and sufficiency.

MEDICINE.

Luntz, R. O.: A Case of Gout in a Seven Year Old. (*Medizin. Obosren.*, Vol. lxii., No. 17, p. 308.)

Gout in childhood is so rare that most pediatric text books take no notice of it.

The author's patient was a boy scarcely seven years old, who suffered from attacks of pain in hands and feet. Following an attack, typical gouty deposits were found on the fingers of both hands. Other clinical manifestations of gout were present.

This is one of the youngest patients with gout on record.

Neviadomsky, P. M.: The Specific Causes of Scarlet Fever, Measles, Varicella, etc. (*Russk. Vratch.*, Vol. iii., No. *33*, p. 1128.)

A remarkable announcement is made by this author, who publishes a preliminary report of his sweeping discoveries. He has found, namely, the specific microorganisms of scarlet fever, measles, chickenpox, smallpox and typhus fever!

The germs of scarlet fever and measles are somewhat similar, but distinguished by important morphological and biological features. They are entirely different from those "discovered" by predecessors.

The microorganism of chickenpox has been found to differ from that of smallpox, thus settling the question of the identity of these diseases.

On the other hand, smallpox appears to have the same specific germ as vaccinia and varioloid. Hence, these three are manifestations of one disease.

A detailed report is forthcoming in the near future.

Kissel, A. A.: The Diagnosis of Noma in Children. (*Medizin. Obosren.*, Vol. lxii., No. 17, p. 202.)

A word of caution against reliance on the routine descriptions of noma. The symptoms usually called characteristic of this condition are often absent. Thus, the gangrenous odor may not be in evidence; or, the destructive process may attack the bones and leave the skin for some time apparently unaffected.

The cardinal symptoms are:—Early edema of the cheek and the formation of a hard central infiltrate.

The author has never seen ulcerative stomatitis result in noma. Besides, in the former, the specific microorganism is present, namely, Vincent's fusiform bacillus.

Porak and Durante: An Epidemic of Whooping-Cough in a Pavilion of the Feeble and the Newly-Born. (*La Presse Méd.*, April 27, 1904, p. 269.)

Ordinarily, whooping-cough is more severe the younger the child; it is frequently complicated by bronchopneumonia, and the mortality ranges from 75 per cent. to 89 per cent. In this epidemic there were forty-four premature infants, suckled by nurses whose children had pertussis. Among these, one developed a frank case, three had slight spasmodic attacks of coughing, which disappeared rapidly. The other forty remained free from any attack. It seems, therefore, that susceptibility in a premature infant is very slight. The one baby attacked was a congenital syphilitic. Of the children of the wet-nurses out of fourteen, ten had frank pertussis; and of these ten, seven were complicated by bronchopneumonia. In spite of their gravity no death occurred, and the ages ranged between one to ten months. In a general way, therefore, it seems that whooping-cough is more benign the younger the child. Grindelia, belladonna, acetate and benzoate of soda and cold baths were used in this epidemic. The conclusion is taken only from this epidemic.

SURGERY.

Rocher, L.: Tuberculosis of the Epididymis in Childhood. (*La Revue Internat. de la Tuberc.*, March, 1904, p. 161.)

Six cases are reported of single or double tuberculosis of this organ, with or without hydrocele. The following notes are made:—Tuberculosis of the epididymis is benign; It usually descends along the vas deferens and the adjacent tissues, very seldom invading the testicular parenchyma. The benignity depends upon the organ attacked. Children suffering from this trouble show no constitutional symptoms, and are apparently in perfect health. There is no invasion of the surrounding ganglia. In secondary epididymotesticular tuberculosis, the prognosis is grave, this being about the last manifestation of the bacillary infection. The rarity of the variety of tuberculosis is explained on the grounds of the poor blood supply of the organ and in consequence, the minimum amount of danger of the blood infection.

Bosc: Hysterical Traumatism in a Boy of Fifteen Years. (*Annales de Méd. et Chir. Inf.*, April 1, 1904, p. 234.)

The boy fell from a height of about three yards, landing on his right side, his left leg remaining caught in a ladder. He arose, was quite able to walk, and was uninjured, with the exception of a slight wound over the left patella which healed entirely in fifteen days. During this time, however, the foot began to turn in little by little, until there was a very noticeable deformity, which lasted two months without treatment. When coming under notice, the entire leg was in inward rotation, the foot in various positions at an angle of 90°, and resting on the ground by its inner border.

Examination of the muscles showed a contracture of the tibialis anticus, the extensor muscles of the toes, and the tensor of the fascia lata. The contracture became exaggerated during examination, there was a slight limp, corneal and pharyngeal anesthesia, and anesthesia of the left calf; no other abnormality. Under chloroform the contracture ceased immediately. "Hysterical contracture" was diagnosed, and the extremity was immobilized in plaster, which was removed in ten days, leaving no trace of the former trouble.

HYGIENE AND THERAPEUTICS.

Nobécourt: The Diagnosis, Prognosis and Treatment of the Digestive Infections of Infants. (*Annales de Méd. et Chir. Inf.*, April 15, 1904, p. 253.)

The general indications for treatment are as follows:—

(1) *The Acute Mild Form.*—A purgative is given with intestinal lavage and a water diet. In twelve to twenty-four hours skimmed milk or buttermilk may be added; if the diarrhea persists, bismuth, benzonapthol, tannigen, bicarbonate of soda and chalk are indicated.

(2) *The Form with Fever.*—Purgatives, lavage and a water diet are indicated with compresses on the abdomen, which treatment should be continued for three to four days. Realimentation must be cautiously managed, beginning with barley- or rice-water, then buttermilk, ass's milk and finally cow's milk.

(3) *Algid Form.*—Here the water diet and lactic acid are indicated, with lavage. Purgatives are contraindicated. Warm coverings, warm baths, hypodermoclysis and injections of camphorated oil may be useful. Refeeding must be carefully watched as above. Astringents and even opium may be necessary.

(4) *Dysenteric Forms.*—Laxatives of sulphate of soda, lavage and water diet are first indicated. Milk and buttermilk are here badly tolerated. Decoction of cereals, bread-water, toast-water; then chicken broth, farina and finally milk in small quantities seems to be the best order of realimentation.

(5) *Chronic Forms.*—A purge and a water diet are first indicated. Then a careful regulation of the foods already named. Alkalies, astringents and antiseptics should be freely used, and also pepsin, pancreatin or papain. When there is cachexia, injections of artificial serum may be of benefit.

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